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THE EARLY HISTORY OF UROLOGY *

PROFESSOR MAX NEUBURGER, DR. MED. ET PHIL., *Vienna*

Translated by DAVID RIESMAN, M.D., SC.D., *Philadelphia*

WE rarely find that the name and designation of a branch of medicine bears as little relation to its content, concept, and extent, as is the case in urology. For the original meaning of the word urology gives no inkling that it applies to one of the most important special fields of medicine, one that not only comprises the knowledge of the entire internal and external pathology and therapy of the urinary apparatus, but also touches neighboring fields and indeed extends directly into their domain. Nevertheless, the word urology is clearly indicative that the entire modern development of this branch of science, with its complicated methods and remarkable achievements, derives in the last analysis from the simple uroscopy as we find it practiced in the most remote periods by physicians of all peoples. In casting a backward glance upon the early history of urology, we must bear in mind that the ancients used the inspection of the urine, its taste and smell, principally in order to draw conclusions as to the general state of health of the entire body, and did not attach much importance to uroscopy in purely local diseases.

Leaving aside the interesting references to urine diagnosis contained in Babylonian, Egyptian, and Indian medicine, we shall begin with water-casting in the time of Hippocrates, whose writings contain an abundance of relevant material. The technique of uroscopy even at that early period had attained a high degree of excellence, although the methods did not concern themselves so much with the diagnosis of individual diseases as with the progress or course of disease in general. The Hippocratic writers, however, describe in an excellent manner several morbid affections of the urinary apparatus, laying particular stress on the color of the urine and on urinary sediment. They distin-

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guish various kinds of sediment according to color, general appearance, quantity and consistency. The clouds and condensations appearing in the urine were designated according to whether they were situated on the surface, in the middle or on the bottom of the vessel, as νεφέλη (nubecula), ἐναιώρημα (suspensum) or ὑπόστασις (sedimentum). Uniform, clumpy, branlike, lamelliform and scaly, sediments are described. Among the abnormally colored urines that which is black, thick, and offensive is considered especially dangerous. The writers point out significantly that the source of the abnormal constituents of the urine may be located in various parts of the urinary system. " One must not be deceived because the bladder itself is diseased and gives to the urine such characteristics, for that is not a general symptom good for the whole body but is only a special symptom of the bladder." If bubbles form on the urine, one may conclude that the disease is in the kidneys and that it will last a long time. Frothy urine associated with unconsciousness, diminished vision, points to approaching convulsions,—this is a good observation of uremic symptoms in chronic nephritis. Bloody urine is indicative of rupture of renal veins, inflammation of the kidneys, ulcers of the bladder, and of disease of the parts surrounding the bladder. " Bloody urine does not indicate anything serious if it occurs rarely and without fever and pain, but when it appears often and one of these other symptoms is present, then it is a dangerous sign." Pus in the urine is found in cases of pain in the bladder with fever, vesical stones, and nodules in the urethra. In diseases of the kidney, fleshy particles appear in the urine. In chronic catarrh of the bladder the sediment is branny. Sandy urine indicates stones. Itching in the " lower parts " (glans penis) implies sandy urine and the passage of small calculi.

In the Corpus Hippocraticum, acute and chronic catarrh of the bladder, inflammation of the urethra with a discharge of pus, periurethral and prostatic abscess, dysuria, stranguria, ischuria and vesical calculi are described. The diagnosis was made by palpation through the rectum. The catheter which is mentioned among the surgical instruments of the Hippocratic writers was apparently not employed in the search for stones in the bladder. Renal colic was diagnosed on the basis of pain radiating into the inguinal region and testicle, of alternation between urgency and retention of urine, and of the sandy character of the urinary sediment. The frequency of lithiasis was attributed to the drinking of clayey and sandy waters. Ab-

scesses in the kidney and neighboring parts, which might result from stone (with rupture into the bladder, abdominal cavity or intestine), were treated by nephrotomy as soon as a fullness was visible. Wounds of the bladder were looked upon as fatal.

In keeping with the oath of Aesculapius, the Hippocraticists did not cut for stone, but left this " to those who were skilled in the technique." It may therefore be assumed that there were in ancient Hellas, as well as in other countries, special cutters for stone. There is, however, in the Hippocratic writings an objective description of the gradual enlargement of stones and of the symptoms caused by them.

It was Erasistratus (about 300 B.C.), one of the great men of the Alexandrian school, who recommended the *S*-shaped catheter. Among the bronze catheters found in Pompeii there is, besides straight instruments, also one with a double curvature. Ammonius, an Alexandrian surgeon known as a lithotomist, invented an instrument with which one could crush large vesical stones when they could not be extracted through the usual incision.

The great work of Celsus, written in Latin and based on the work of the Hippocratic and Alexandrian schools, contains not a few references of importance for the history of urology. It appears that Celsus tried to determine on the basis of the different characters of the urine whether the disease was referable to the bladder, the kidneys or other organs. Bloody or purulent urine resulted from disease (ulcers) of the bladder or kidney. Those suffering from stone could be recognized by the following signs: The urine is voided with difficulty and in drops; occasionally it is passed involuntarily. It contains sand-like admixtures and at times bloody or purulent material. Some can only void in the upright posture; others only when lying down, and this is the case especially when the stone is large. Others can succeed best if they bend forward and lessen their pains by stretching the urethra. There is also a feeling of great heaviness, which is increased by running or by any movement. If the kidneys are diseased, then they are apt to be diseased for a long time. In treatment Celsus advises rest, attention to the bowels (enemas), hot sitz-baths, avoidance of cold beverages and foods, and especially abstinence from all salty, spicy and sour articles, and fruit. He recommends an abundance of water and the use of substances that act on the secretion of the urine. Several chapters deal with urinary difficulties and their treatment. Catheterization with the curved metal catheter and its indica-

tions both in the male and in the female sex are exhaustively discussed. Several sections are devoted to the treatment of patients with stone, the signs of gravel and of soft stones, and the treatment after the removal of the stone. The chapter on lithotomy is especially famous. The method described in this classical section was probably that taught in the Alexandrian schools and was in use for many centuries, indeed up to the time of the Renaissance. The principle of " deep " lithotomy is described by Celsus as follows: Exposure of the transition between the urethra and the bladder by means of an incision through the soft parts of the perineum; opening of the urethra and extraction of small stones through the wound, with eventual preliminary crushing of the stone. Celsus mentions an instrument recommended for lithotomy by the famous Alexandrian surgeon Meges.

Aretaeus, who probably lived about the middle of the first century A.D., in connection with diseases of the bladder speaks of blood clots, stones, ulcers, and impaction of stones in the urethra. He advised that the stones should be pushed back with a catheter so that the urine could be voided. If that were not possible, the perineum and the neck of the bladder should be incised so that the stone could fall out and the urine flow again, even if there was danger of a permanent urinary fistula. He designates as diabetes that disease in which, the chief symptom being thirst, the beverages run through the body and solids are dissolved in the urine. Emaciation and collapse may occur. The causes are acute diseases or poisons. In the treatment he recommends among other measures the milk cure.

In the preserved fragments of the writings of Heliodorus, who practiced surgery in Rome under Emperor Trajan, it appears that it was customary in treating strictures of the urethra to introduce after the removal of the " proliferations " a bougie of paper containing a stilet of bronze or zinc, or the rib of a feather. In antiquity and even as late as the Renaissance, strictures of the urethra were attributed to fleshy growths in the canal, the result of ulceration. A partial or complete change in the canal led to dysuria, stranguria or ischuria. Excision of the fleshy growths was performed with a small stilet which was introduced into the canal so as to perforate the proliferations. The instrument was then given a circular turn. The detached masses would be expressed from the urethra with the finger or removed with a small forceps.

Rufus of Ephesus, who also lived in the time of Trajan, dedi-

cates a separate work to the diseases of the urinary organs (diseases of the bladder and kidneys), in which he speaks of hematuria, paralysis of the bladder, and vesical stones. He gives interesting observations on the methods of examination as well as on treatment. It is particularly noteworthy that he mentions bimanual exploration. The patient, who is in the recumbent posture, is requested to bend the legs back as far as possible. The finger of the left hand is then introduced as high up as possible into the rectum, while the other hand presses down on the suprapubic region until the hard body (stone) is found. Sometimes rectal examination will reveal instead of a hard body, soft swellings (hypertrophy of the prostate) and abscesses. Rufus employed no diuretics in inflammation of the kidney, at least not in the beginning; instead he used warm enemas. In inflammation of the bladder of males he advised against the introduction of the catheter and recommended instead a warm and mild treatment—compresses, baths, clysters, suppositories, and pressure in the region of the bladder. He based the diagnosis of suppuration in the kidney on the discharge of large quantities of pus in the urine and on intermittent fever.

The second greatest physician of antiquity, Galen, concerned himself very much with the diseases of the urinary tract. Difficult urinary secretion, according to Galen, had three degrees of intensity. Dysuria is the mildest form, stranguria is present when the urine is voided in drops, ischuria when no urine appears externally. The cause resides in obstruction of the urinary passages (by reason of very thick urine, coagulated blood or calculous concretions), in inflammation or paralysis of the bladder (because of dyscrasia or pathological new growths), or in the acidity of the urine (in consequence of changes in the blood), or in diseases of the kidney. Dysuria can occur in the absence of disease of the urinary organs. If retention has lasted a considerable time, Galen advises evacuation of the urine with an *S*-shaped catheter. Inflammations of the kidney are often of long duration; indeed they can persist throughout life. Stone in the kidney arises just as gouty deposits in the joints. Bladder stones are more frequent in children, especially boys. Vesical calculi may be adherent or free. When the stone drops in front of the internal orifice of the urethra it may produce a temporary retention. Galen, like Rufus, employed bimanual examination. His description of renal colic is similar to that of Hippocrates. For purposes of differential diagnosis between renal and intestinal colic he made use of laxatives. He attributed diabetes,

the essence of which he saw only in polyuria, to a loosening of the kidney structure. He designated as psora of the bladder a condition in which the urine had a thick, tough consistency and contained branny scales (chronic cystitis). In the therapy of urinary calculi and of gout he employed among other things the following: Ass's milk, wine with honey, myrrh, parsley, caraway, ammoniac and the powder found in sponges; against hematuria, alum; and against ischuria, apium.

The main work of Celius Aurelianus on acute and chronic diseases, supposed to have been written in the fifth century, deals quite exhaustively with infections of the urinary tract. The author evidently knew a variety of diseases of the bladder, such as tumor, retention, ulcer, induration, debility, paralysis, stone, hematuria and slow and difficult micturition. Stones in the bladder are accompanied by severe pain which radiates to the pubic arch, the umbilicus and the testicle. The diagnosis was made on the basis of subjective signs and the finding of sediment in the urine. A sound was also employed. In the treatment of diseases of the bladder, one must avoid irritating diuretics and must depend chiefly on external applications, injections through a catheter, dietetic regimen and drink-cures. "Nephritis" (Passio renalis) runs its course with fever, constipation, abdominal pains and vomiting and ends in a state of weakness and emaciation. The urine at times is oily or putrid; the inflammation may extend to the ureters. The causes of the condition are exposure to cold, the use of spicy foods, digestive disturbances, injuries (falls on the buttocks), and abuse of diuretics, such as cantharides. A special chapter is devoted to hematuria. The Compendium of Cassius Felix, composed in the fifth century, mentions among the causes of dropsy, hardening of the kidney (renum saxietas). In the treatment of painful conditions, injections into the bladder are recommended.

The Byzantine writers on diseases of the bladder and kidney largely follow Galen. It is interesting that Oribasius (fourth century) in his colossal compendium mentions among tumors one at the neck of the bladder and in the cavity of the organ. This in all probability has reference to hypertrophy of the prostate. In the work of Aetius (sixth century) there is a chapter on diseases of the urinary tract including stone formation in the kidney and bladder. Various dietetic and pharmaceutical remedies are recommended, but while lithotomy is mentioned, it is not described. In one of the chapters urethrotomy is advised in cases of impacted stone after attempts at extraction have failed. This

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particular observation was recorded by Philagrius, who practiced in Saloniki about the middle of the fourth century [B.C.]. Alexander of Tralles felt justified in drawing conclusions as to the nature of the disease from the quantity and appearance of the urinary sediment. He employed diuretics to bring about elimination of the pathogenic agents. Alexander also endeavored to make the differential diagnosis between bladder and kidney diseases more precise and expressed the opinion that strangury usually points to disease in the bladder; if the urine contains pus, it is suggestive of the presence of ulcers in the bladder. If there is no pain or swelling in the region of the bladder and no retention, the disease has its seat in the ureters or the kidney. Suppurative inflammations of the kidney are characterized by fever, pains and chills. The patient experiences a sense of weight when lying on the healthy side and every effort increases the pain. An excellent description of renal colic is given. The differential diagnosis between vesical and renal diseases is based on the general character of the urine. Paul of Aegina (seventh century) discusses among other subjects the practice of catheterization and injections into the bladder. With regard to the latter he says, " As it is often necessary when the bladder is ulcerated to irrigate it, we make use of an ear syringe, as it is best by means of it to make the injection. If this is not possible, we attach to the catheter an ox bladder and make the injection." The description of the operation of cutting for stone given by Paul is the most exhaustive that is to be found in any Greek author. It is contained in the 60th chapter, book VI. The 45th chapter of book III of the Epitome deals with diseases of the kidney and with renal stones, renal colic and the symptoms of stone in the bladder.

While the authors of classical antiquity and the great Byzantine physicians just mentioned laid stress on the examination of the urine they did not fall into the error of ignoring the other symptoms. Yet it is to be noted that subsequently more and more prominence was given to uroscopy; in fact uroscopy became the actual basis of medical practice. Erasistratus and his followers had already taken occasion to mock those physicians who distinguished an altogether too great number of colors of the urine and drew diagnostic conclusions from them. " Erasistratus et sectatores irridebant urinarum observatores et tinctores appellabant." A work of uroscopic nature was falsely attributed to Galen; it is probable that this pseudo-Galenic work was written by Magnus of Emesa.

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A tremendous influence upon uroscopy was exercised by the writings of Theophilus (seventh century), who discussed particularly the color changes of the urine. He mentions no less than 17, and used them as well as the consistency, the opacity and the sediment for diagnostic and prognostic conclusions. Theophilus based himself on the view of Galen that the urine was secreted by the lower vena cava. He added, however, the hypothesis that the watery constituents of the urine might be present in the portal vein and might thence enter the lower vena cava through exceedingly fine capillary canals. One could from the character of the urine learn the condition of the blood as a whole and also the diseases of separate parts of the body.

The last prominent Byzantine physician, Joannes Actuarius, whose extant work on the urine was written in the 14th century, not only collated the observations of his predecessors, but subjected them to a severe critical examination and added to them knowledge obtained by many personal observations. The changes that the urine undergoes in the diseases of various organs is explained on the basis of "sympathy." Joannes distinguishes twenty colors of the urine, takes note of the sedimentum, of the suspensum and the nubecula and, after many special observations, draws his conclusions on the humoral basis of pathology. He used a vessel made of white glass, which was divided into gradations. The sedimentum occupies the four lowest markings, the suspensum (sublimia) the sixth, seventh and eighth, and the nubecula the tenth and eleventh. The fifth and ninth form the interspace between sedimentum and suspensum and between the latter and the nubecula (see figure 1). Joannes Actuarius, whose monograph consisted of seven books and subsequently became the basic work in uroscopy, contrary to the prevailing opinion did not attach to water-casting the value of a universal means of diagnosis, but emphasized the necessity of examining the pulse, the respiration, the sputum, the feces, etc. In general, it is stated, no single method suffices in arriving at a correct diagnosis and prognosis. Particularly was it necessary to supplement uroscopy with examination of the pulse. By means of the pulse one could determine the condition of the internal heat and of the vital force, while the urine indicated the quality and quantity of the humors, and the excreta the nature of the coction (digestion). The method of most value in a particular case depended on the nature of the disease.

In Arabian medicine urology occupies by no means an unimportant place. Rhazes in the twenty-third book of his

"al-Hawi" ("Continens") describes the origin, symptoms and treatment of vesical stones (lithotomy). Retention of urine can be produced through stone or through paralysis. If medicine has no effect, the catheter is to be employed. In the principal

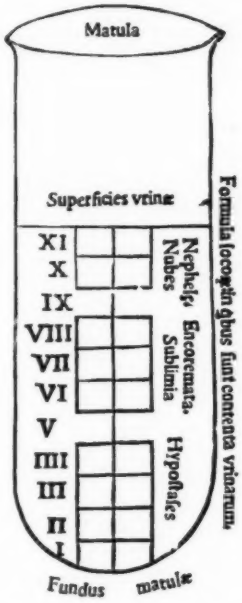

FIG. 1. Reproduced from the copy of the original edition (Venice, 1519) of Actuarius' "De urinis" in the library of the College of Physicians of Philadelphia.

work of Ali Abbas, "al-Maliki," there are a number of cases of diseases of the kidneys and bladder, including their treatment. The extraction of stones from the bladder is described after the manner of the ancients. Albucasis in his "Surgery," which is based principally upon the writings of the Greeks, especially upon the work of Paul of Aegina, discusses exhaustively the diseases of the urinary tract. The causes of retention of urine are given as follows: Stricture, stone, blood-clot, pus, fleshy excrescences (hypertrophy of the prostate). If other methods fail, catheterization must be employed. The catheter, made of silver, is to be anointed with oil, fresh butter, or egg albumen. For the injection of oil or other fluids into the bladder in ulceration or suppuration he used a syringe having a long cannula with three openings. In the description of lithotomy Albucasis is a

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follower of Paul of Aegina, but makes certain not unimportant changes that indicate independent observation. He discusses very fully the crushing of the stone. There is also an interesting chapter concerning lithotomy in women, in which he indicates the difficulties that arise through oriental customs in the treatment of women by men in the region of the genitalia. Uroscopy itself is treated in an even more subtle and complicated manner, although Rhazes had already attacked the quackery that had developed in connection with uroscopy. Men had attained great wealth through purposely false water-casting. As an illustration he relates the case of the apothecary Abu Koreisch Isa who was made the personal physician of the Kalif al-Mahdi because he had predicted from the urine that the Kalif's wife would give birth to a son.

One of the most popular works on the urine was that of the Jewish physician Isaac ben Soleiman al-Israeli (ninth to tenth century). It is characterized by logical and clear descriptions. Isaac considers the semiotic of the urine of greatest importance because it gives information concerning the energy of the vital processes, of the vital heat and of the processes of coction (metabolism). The work of Isaac, translated into Latin, exercised the greatest influence upon Western medicine in the Middle Ages. Avicenna, the chief authority in Arabian medicine, places a subtle uroscopy in the very center of diagnostic methods.

In the oldest and most famous medical school of the occident, in Salerno, uroscopy was cultivated intensively through the influence of Arabian medicine. An increasing number of works appeared, nearly all basing themselves on the writings of Isaac Judaeus which had been translated into Latin by Constantine. Among them, to name just a few, are the " Regulae urinarum " of the younger Johannes Platearius, the work " De urinis " of Archimathaeus, the " Compendium de urinis " of Master Urso, in which color and density of the urine are employed in diagnosis and are particularly valued, the " Regulae urinarum " of Maurus (about 1160), containing a uroscopy based on Theophilus and Isaac Judaeus, as well as a special pathology. Maurus noted the color, the density, the quantity and the contenta (turbidity and sediment). He distinguishes nineteen colors of the urine (albus, lacteus, glaucus, caropus, subpallidus, pallidus, subcitrinus, citrinus, subrufus, rufus, subrubeus, rubeus, subrubicundus, rubicundus, inopos, kianos, viridis, lividus, niger). Just as in the human body, four regions could be differentiated in the urine. In consequence special diagnostic importance was at-

tached to the place in the urinary vessel in which change of color, clouding, etc., was observed. The four regions in which the body was divided were the head region (membra animata); the thorax (membra spiritualia), that is, the heart and lungs; the abdominal region (membra nutritiva), namely, the stomach, intestines, the liver, spleen, etc.; and the region of the genital organs (membra generativa), that is, in addition to the external genitalia, the kidneys, ureters and bladder.

The medical didactic poem of Gilles de Corbeil, who transplanted Salernitan medicine to Paris and who lived to the beginning of the thirteenth century, enjoyed the greatest respect as late as the sixteenth century. "Liber de urinis" is a compendium on uroscopy consisting of 352 hexameters. Many commentaries were written upon it. After a definition of the urine (sanguinis serum) the author discusses the points to be observed, namely, quality (color), density, contents (opacities and sediments), quantity, the place where the urine in the glass shows itself turbid, the time of micturition and of the examination, the age of the patient, temperament, sex, mode of life, and psychic state. This is followed by a discussion of the genesis and pathognonomic significance of the colors and the sediments of the urine. The poem of Gilles de Corbeil had many imitators and many prose and poetic excerpts were made from it; among others the "Compendium urinarum" of Gualtherus Agulinus (13th century).

Besides the very subtle examination of the pulse, uroscopy played a chief rôle in all medical fields during the later Middle Ages. It served to determine the complexion and the strength of the patient, the particular disturbance of function and its location, and the dyscrasia underlying the disease. Uroscopy presupposed the doctrine that the urine was a distillate of the blood formed in the liver and of the other cardinal juices derived from the metabolism or the second digestion in the liver. In consequence the belief prevailed that one could determine from the urine not only the state of the urine-forming organs and of the urinary tract, but also the processes of coction, the condition of the blood and other humors,—in other words, the state of health of the whole body. All diseases depending upon anomalies in the humors or connected in any way with the humors, which constituted the largest part of pathology, were the domain of uroscopy. While the pulse was principally of value in prognosis the urine facilitated diagnosis. Manuscripts of the fourteenth and fifteenth centuries contain colored illustrations indicating the

significance of uroscopy in so far as it was based on the color of the urine. These illustrations depict the so-called urinary discs, water-casting discs or water-glass tables. Figure 2 is an exam-

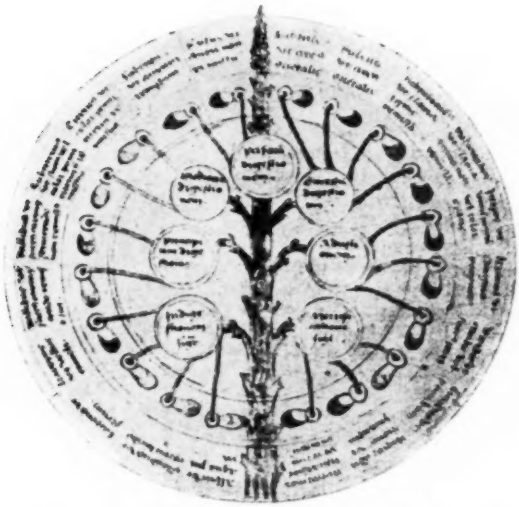

FIG. 2. (Codex lat. 11229. Bibliothèque Nationale.) Reproduced from the author's original article in the *Wiener klinische Wochenschrift*, 1936, Nr. 37/38.

ple of such a disc preserved in the Cod. lat. 11229, of the Bibliothèque Nationale in Paris (c. 1400). The illustration shows a central tree surrounded by seven circular discs, and around these in a circle twenty urine vessels, each with correspondingly colored contents, and the legend at the periphery. The types of urine discs and their accompanying texts differ considerably in the various manuscripts. The color of the urine gave information as to the predominance of one of the four qualities or cardinal humors or, as may be seen in the legends, of the degree of coction of the juices.

The importance of uroscopy in the Middle Ages may be inferred from the many works of art in which the physician is shown with a urine glass in his hand, even in the representations of the medical saints, St. Cosmas and St. Damian (Fig. 3). The urine glass is the chief symbol of the medical art. In fact, the urine glass has become a part of the escutcheon of the medical guild. Even in the non-medical literature of the period uroscopy plays a not inconsiderable rôle, and much later Shake-

speare ranks " the monarch of the urine " as co-equal with the physician (" Merry Wives," II, 3).

Just as in the age of Hippocrates there were empiric lithotomists, so there were in Italy many special cutters for stone. The

FIG. 3. Reproduced from the copy of the "Nuremberg chronicle," 1493 (German text), in the library of the College of Physicians of Philadelphia.

most famous of these belonged to certain families of Norcia in Umbria and vicinity, particularly the Castello and Contado delle Preci. During a long series of generations the Norcians and Precians practiced lithotomy, herniotomy and cataract operations. In other countries travelling empirics performed lithotomy, the local surgeons declining to operate on account of the danger of the operation. There is no contradiction to this in the fact that the principal works of surgical writers of the Middle Ages devoted extensive chapters to the diseases of the urinary tract. The writings are for the most part based on literary tradition, but here and there one finds a considerable number of practical innovations. Even the greatest surgical author of the fourteenth century, Guy de Chauliac, says that he never performed lithotomy as other " periti " did. He leaves this to peripatetic lithotomists. In a section on renal and vesical stone he states that in the diagnosis the introduction of the finger into the rectum is not sufficient, but that a catheter should also be used. Before discussing lithotomy he mentions a number of

internal measures, also baths, compresses, plasters, inunctions in the suprapubic and perineal regions and penis, as well as injections into the bladder in order to increase the secretion of urine. Catheterization is exhaustively discussed, but the description of lithotomy is very brief and based on Celsus and Paulus.

The progress that occurred in medicine during the course of the sixteenth century, largely as the result of the rediscovery or rebirth of antique art and science, and which led to the awakening of independent observation, is clearly revealed in the urology of the period. Definite improvement, even if only in traces, is recognizable in the anatomic knowledge of the urinary organs. There is likewise a broadening of the general concept of disease, which redounded to the great advantage of surgical urology. Eustachius concerned himself with the structure of the kidney and describes in his " De renibus libellus " the tubes, later called the tubes of Bellini. In order to learn something of the formation of the urine he injected water into the renal artery. Contrary to the teaching of the ancients that wounds of the kidney are absolutely fatal, Falloppius reports cases of cure. Franciscus de Pedemontium was the first author to mention movable kidney. In the same century we find the first observations on conditions that were undoubtedly hydronephrosis. Bauhin and Plater described a recovery from wounds of the bladder.

The technique of lithotomy was much improved in the sixteenth century. The usual method, described by Celsus and by Paulus of Aegina, was modified so that prior to the operation a curved hollow catheter was introduced, with its convexity toward the perineum, into the urethra. Since the incision in the pars membranacea was made in the groove of this sound, the operator's hand had a sure guide. Because so many instruments were required for it, this procedure was called " the procedure with the large instrumentarium." Although the inventor was Bernardo di Rapallo, the operation was generally called after the name of Mariano Santo. The disadvantage of perineal lithotomy, namely that it often led to suppuration in the prostate and the mouth of the seminal vessels, with consequent impotence, and the inability to remove large or incapsulated stones, suggested the thought that it might be possible to remove the stone through an incision above the pubis. Pierre Franco was the first (1560) to execute superior lithotomy. Later Rousset suggested that the bladder be filled with water before the operation is undertaken. Franco, recognizing that the high incision involved many risks, returned again to perineal lithotomy, but

under a new method, namely, the sectio lateralis, that is, left-sided perineal lithotomy through the prostate and the neck of the bladder without opening the bladder directly. It is interesting that Franco also made the suggestion of a two-stage lithotomy in cases in which the extraction of the stone was difficult or the patient's strength greatly reduced. With regard to vesical stones in the female sex, he called attention to the fact that they could at times be easily extracted by simply enlarging the diameter of the urethra. According to Benedetti a number of surgeons crushed the stone with iron instruments without making any incision. The operative cure of strictures of the urethra by means of the knife, an operation already practiced by the surgeons of the Roman Empire, was revived by Ambroise Paré, who used an instrument resembling the urethrotome. Bougies anointed with medicaments were also used in stricture, being particularly recommended by Laguna.

Although in the last centuries of the Middle Ages voices had been raised against uroscopy, for example those of Petrarch in the 14th century, Johann Geiler of Strassburg in the 15th century, the movement grew in the age of humanism. Among the opponents of uroscopy should be mentioned Bishop Dudith von Horekowicz, the physician Clementius Clementinus, Christoph Clauser in Zurich, Franz Emmerich in Vienna, Bruno Seidel in Erfurt, Adolph Scribonius in Marburg, Johann Lange, physician to the Elector Palatine, Sigmund Koelreuter and Leonardo Botallo, the last one of the most famous practitioners of his time. The most vehement opponent of uroscopy, by this time degenerated into uromanty, was Petrus Forestus, as appears in his book "De incerto fallaci urinarum judicio." Euricius Cordus appealed to the Magistracy of the City of Breslau to inform the public that it was not possible to recognize diseases by inspecting the urine. It was, however, not possible to abolish uroscopy and uromanty so easily and the nimbus that surrounded a physician who was able by a mere inspection of the urine to make a diagnosis was so great that physicians who found that they needed additional means for examining a patient were not rarely held in low esteem. Moreover, there were a number of medical authorities who during the course of the 16th and 17th centuries endeavored to re-establish uroscopy. Numerous works of this period contain detailed rules concerning the art of water-casting, as for example the writings of Jean Vassès, Davach de la Rivière and others. Robert Fludd, a contemporary of Bacon and Harvey, went so far as to write two tracts on uromanty in which

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diagnosis and treatment are based on the planets and on astrological investigation after inspection or even after a mere description of the urine.

Nevertheless, attempts were made in the 16th and at the beginning of the 17th century to replace uroscopy by chemical and physical methods. Even in an earlier period Nicolaus Cusanus proposed that the scales be made a mathematical basis in medicine. " Just as by the use of the water-clock, that is, by determining the weight of water, it was possible to arrive at a better understanding of the quality of the pulse than through mere palpation, and as it was possible to measure the depth of breathing in the same way, so the quality of the urine could be better determined by weight than by simple inspection as was the general practice." Cusanus and Leonhard Thurneysser, a follower of Paracelsus, and van Helmont, the most important successor of Paracelsus, determined the relative weight of the urine. The instrument used to ascertain the specific gravity, called hydrometrum, was very similar to the ureometer used at the present day.

Microscopic examinations of the urine were first made by Alphonso Borelli (17th century). The application of chemistry to medicine initiated by Paracelsus led in the field with which we are concerned to the so-called Spagyric Urology, a process of distillation employed especially by Thurneysser, who distinguished a vaporous or volatile, a watery and a mineral substance in the urine.

Real chemical examination was inaugurated by Bellini, in whose works we find the first beginnings of a scientific analysis. Bellini at the early age of 19 published his famous book, " De structura et usu renum " (Florence, 1662) in which he spoke of the kidney as in the main a conglomerate of tubules, the so-called " Bellini tubules," and in which he gave fairly correct views regarding the physiology of renal activity. He defines the urine as an excrementitious fluid secreted from the blood by the kidneys, whence it reaches the bladder by way of the ureters. He considered it an axiom to compare the urine of the patient with normal urine. His methods of examination did not include distillation; he heated the urine and noted changes in color, consistency and transparency. After partial evaporation, a liquid analogous to the original urine was produced by the addition of water. The consistency of the urine depended on the relation between its liquid and solid substances. Bellini also emphasized the importance of the specific gravity of the urine. One of the

most valuable contributions on urine diagnosis was made by the Leyden professor, Fridericus Dekkers, who in 1694 was the first to perform the heat test for albumin with the addition of acetic acid. In his work, "Exercitationes practicae," he states that the urine of certain patients becomes turbid on boiling and that on the addition of acetic acid a flocculent precipitate falls to the bottom. It was the great English physician Thomas Willis who, in his treatise, "De medicamentorum operationibus" (Opera omnia, Geneva, 1676, liber IV, cap. 3), made the statement that the urine of diabetics was remarkably sweet, just like honey or sugar. He did not realize that this sweetness was actually produced by sugar. It is noteworthy that Willis treated diabetic patients almost exclusively with either undiluted or diluted milk, or with barley, which was taken several times a day.

During the 18th century the lateral incision for stone became the most popular method of lithotomy. In the history of this method Frère Jacques (Beaulieu), Rau, Cheselden and Morand played an important rôle. Among the modifications which later were made, that of Frère Côme is especially noteworthy. He recommended the hidden lithotome for the operation. However, the sectio alta, the suprapubic operation, was also revived, various modifications being made by MacGill, Douglas, Cheselden and Morand. Progress in our knowledge of the etiology and anatomy of stricture of the urethra is largely due to John Hunter. Hunter limited himself, in all cases in which the introduction of a bougie was possible, to the mechanical method of treatment. Where this failed, he employed repeated cauterization with silver nitrate. In opposition to Hunter, Desault resorted to cauterization only in the rarest cases. He also rejected the so-called "medicamental" bougies recommended by Daran. His method in the average case of stricture consisted in permanent dilatation by means of an elastic catheter.

The widespread interest in the chemistry of the urine led in the 18th century to the discovery of several normal and pathological urine-constituents. It was the great clinician Boerhaave who gave particular attention to the examination of the urine. He published the fifth edition of Bellini's work on the urine and continued the latter's chemical investigations. Boerhaave invented a method for the determination of the specific gravity of the urine. In a work on sciatica by Domenico Cotugno, published in 1764, we find the important discovery of a substance coagulated by heat in the urine of dropsical patients. We have

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already mentioned, however, that the heat test of the urine for albumin with the drop-by-drop addition of acid really goes back to Dekkers. It became customary about this time, following a suggestion of Cruikshank, to divide the dropsical cases into those with and those without albumin in the urine.

Pathologic studies (Bonet, Morgagni) demonstrated with a high degree of probability the relation between ascites and changes in the kidney, a relation already conjectured by Hippocrates, Galen, Aetius, Avicenna, and William of Saliceto.

The chemistry of the decomposition of the urine, recognized as a striking sign of cystitis, gave rise to numerous investigations beginning with those of Boerhaave and continued by Rouelle the younger and by Cruikshank. They were brought to a certain degree of completion by Fourcroy and Vauquelin when they in 1799 isolated urea and demonstrated its decomposition with the formation of ammonia. Scheele in 1770 [1776] discovered uric acid. The study of diabetes was markedly advanced about one hundred years after Willis by Dobson, who in 1774 proved that the urine of all diabetic persons tasted sweet and that it showed vinous and acetic fermentation, that the blood serum also had a sweet taste, that the urine on evaporation under heat deposited a white precipitate. The taste of this precipitate was similar to that of brown sugar. However, his ideas regarding sugar did not receive acceptance until about 1800, following the researches of Home, Cowley and Rollo. Johann Peter Frank was the first to produce sugar in crystal form by chemical means.

The first decades of the nineteenth century are characterized by noteworthy advances in the domain of the chemistry of the urine and in those of the pathology of the urinary tract and the surgical technique. As far as the chemistry is concerned the synthetic preparation of urea by Woehler (1828) was of the greatest significance. After Alison, as early as 1823, had asserted that in several cases of dropsy with albuminous urine he had found hard granular kidneys, Bright in a series of essays, the first of which appeared in 1827, stated with positiveness that many cases of dropsy depended on disease of the kidneys and that this showed itself in the presence of albumin in the urine. The further investigation of these diseases of the kidney, which was favored by the rapidly developing microscopic and chemical methods of examination, gave a secure basis to pathology. The first large monograph on all the diseases of the kidney was published by Rayer (1839–1841). The first attempts to make the urethra visible to the eye were made by the Frankfort physician,

Bozzini. Segalas in 1826 constructed an improved urethrocystic speculum based on new principles and the American John Fisher in 1827 described a complicated instrument for illuminating dark cavities. The first impulse to refine the almost forgotten lithotrypsy was given in 1813 by Gruithuisen in Munich, but his instruments were not suitable for crushing the stone and did not serve their purpose. Among those who invented more appropriate instruments and also made experiments on the cadaver, Fournier, Amussat and Leroy d'Etiolles should be mentioned. Civiale (1824) with his litholabe was the first who succeeded in the living patient. Further development resulted from the invention of the percuteur by Heurteloup. It is to Félix Guyon that the credit belongs for establishing the symptomatology of the diseases of the urinary tract on a definite basis; while the development of the correct methods for diagnosis is the immortal achievement of Max Nitze.

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BIBLIOGRAPHICAL RESOURCES OF THE DOCTOR IN THE SMALL COMMUNITY

EDWIN H. JAMESON, M.D.

Fellow of Trudeau Foundation, Attending Surgeon, Saranac Lake General Hospital

IN A letter written just one hundred and twenty-five years ago to his friend Dr. George C. Shattuck of Boston, Nathan Smith, the occupant of a "settee of professorships" in the newly founded Dartmouth Medical School, wrote in part as follows:

Dear Sir:

. . . I have lately added 52 volumes (*sic*) to my library of historical works, viz: Mavors' General History, 26 vols., Mavors' Voyages, 19 vols., and Hume's England, 8 vols. As my time is so taken up that I cannot read such lengthy works, have set two pupils to reading in course and have requested them to fix a kind of index to everything relating to medicine or medical men to be found in the several works, so that I hope to reap some advantage from the books tho' they are not medical.

In your last, you mentioned a gentleman who is going to England and who will purchase any books I wish for. I do not know whether he is a bookseller or whether he must have the money to purchase with before he goes; if he is a dealer in books and will purchase books which are wanted and will wait for his money till the books are delivered at Boston, should be glad to purchase to a considerable amount, but the dearth of money here is so great that I cannot immediately send enough to make it any object, not having as yet made any collections in the present year. I will, however, make out a list of books which I should be glad to purchase and for which I would pay the money as soon as the books could be procured, and perhaps the man you mention or some importer of books will be willing to order out the books.[1]

A list of the desired books is appended and the letter closes with a request that Dr. Shattuck also forward "one canister of the best battle gunpowder."

What a fascinating chapter could be written into the history of medicine on the various methods by which the physicians of the past have secured information on the scientific advances of the profession or, conversely, on the means by which medical knowledge has been disseminated through the ages. In such an outline one would find that, from the time of Aesculapius even to the present, the outstanding means has been that of traveling

[1] Emily Smith. "The life and letters of Nathan Smith." Yale Univ. Press, 1914, p. 71.

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from one center to another. These centers have, perhaps, varied with time from the temples of the Greeks, through the monasteries of the Middle Ages and the universities of the Renaissance, to the elaborate medical centers of the twentieth century; but the character and purposes of the pilgrim-physicians have changed but little. It is true that the early years of the seventeenth century saw the establishment of medical societies such as the famous Accademia dei Lincei and the Royal Society of London, with corresponding members in foreign countries, which acted as clearing-houses for new discoveries; but it is improbable that these had a very profound influence on the average medical man. For first-hand information, the peripatetic method as exemplified by Paracelsus in the sixteenth century and signalized in modern times by Osler has been and will probably remain the first in importance.

In the intervals between his wanderings, however, the medical man of the past and of the present has leaned heavily upon the printed word. Even as the invention of the printing-press put into his hands the writings of the ancients and of his contemporaries, which only princes and the wealthy monasteries had heretofore been able to afford, so the amazing increase in the number and scope of medical periodicals and journals in the past century has enabled the physician who is more or less removed from the bibliographical centers of the profession to keep in close touch with the work of his confrères. A gap as great as that which existed between the times of Aristotle and Vesalius has been spanned in the century and a quarter that separates the writing of Nathan Smith's letter and the writing of this essay.

Present-day facilities make it hardly necessary to differentiate between the man who practices in a city blest with a well-stocked medical library and the one who lives in a smaller community perhaps many hundreds of miles distant. Such a statement, emanating from one who lives in such a small community, savors of bravado, perhaps, but it is nevertheless true and a fact of which American medicine can well be proud. Thanks to the excellence of the inter-library loan service, books and journals which the economic exigencies of private practice would otherwise render virtually inaccessible are available through the simple expedient of making one's needs known to the library and paying the mailing charges. As a matter of fact, the number of libraries in the United States in which *every* reference needed in the preparation of a technical paper can be found could be counted on the fingers of one hand; the inter-library loan service

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must be called into play even in the case of otherwise excellent libraries. By this admirable arrangement the number of books or specific reports inaccessible to the American physician is indeed small. The writer himself has found the inter-library loan service almost preferable to bearding the intricacies of the larger libraries in person.

As is the case with the researcher in the library itself, the out-of-town investigator owes a tremendous debt to the various catalogues of the Army Medical Library and the *Quarterly Cumulative Index Medicus*. But even in instances in which these indices are not available, the problem is not insurmountable, as many of the larger libraries are now equipped to furnish complete bibliographical data at a small charge. There are, in addition, the more or less valuable bibliographical lists appended to preceding reports on the subject under consideration. It is regrettable that authors are not more inclined to accuracy in the listing of the references to which they are indebted in the preparation of their papers.

Having determined upon the references desired, our investigator has only to request his local library to send the list to one of the medical libraries in the same general division of the country in which he lives or to the Army Medical Library. And therewith the one or two flies in the ointment become apparent. In order that our investigator may obtain an article, however short, the library must ship him the entire bound volume in which the paper appeared, unless the request is for a very recent report in a volume as yet uncompleted or at least still unbound. If he has requested a dozen references, he may be astounded one morning to find the expressman leaving at his door a box large enough to cause his neighbors to wonder if the doctor has finally been able to afford a new X-ray or radio.

Several methods of obviating this inconvenience suggest themselves and are passed on for what they may be worth: (1) the possibility of binding the volumes of the larger and more bulky journals in parts; (2) the maintenance of a set of unbound numbers for inter-library exchange; and (3) the development of a reprint collection. The first is open to criticism from the standpoint of cost and, perhaps, the increase of stack space required; while the second may be objected to on the ground that unbound periodicals will not stand a great deal of handling. Many of the libraries have adopted the third method and are rapidly accumulating reprints of important papers for future reference.

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While the transportation charge on these larger volumes often limits the amount of material that our investigator feels he can afford to consult, the system is not entirely without its merits. Fascinating pastures for browsing are opened to one who is historically inclined and willing to take time to scan the indices of some of the old journals, and material is often encountered that one would not otherwise think of looking up. The author recalls many such unexpected thrills and heartily recommends, to the mind that has been jaded by the reading of too many of the modern statistical reports, an evening devoted to the perusal of early issues of the *Lancet, British Medical Journal,* or the *Guy's Hospital Reports.*

On the same day the books arrive comes a courteous but firm letter from the library regretting that they are unable to send a certain old and valuable book from which our investigator had hoped to glean certain historical facts to embellish his essay and impart to it the polish of erudition. Of course a photostatic copy of the work *may* be available, but it is surprising how often the particular work desired has been neglected. And photostatic copies, when made to order, are costly. The film libraries, as suggested by Dr. Draeger of the U. S. Navy, will be invaluable to the bibliophile of the future to whom original texts are not available. From this standpoint alone, then, must the physician who lives at a distance from the larger medical libraries feel at a disadvantage.

In addition to the larger medical libraries, which are located, for the most part, in metropolitan areas, there has been a tendency within the past few years for the county medical societies and, in some instances, for the staff members of the local hospitals, to establish libraries for communal use. Under ideal conditions and with adequate financial support, certain of these libraries have succeeded in making an exceedingly worth-while collection of periodicals and text-books for what might be termed "everyday use." In many other instances, unfortunately, such libraries carry the name only by courtesy and serve merely as depositories for unwanted journals and old text-books.

The work of the American Medical Association and the American College of Surgeons in establishing "package library services" is noteworthy and undoubtedly fills a need in certain instances in which the physician wishes to "read up" on a subject without going to the trouble of referring to one of the various index catalogues. The American College of Surgeons also maintains a Department of Literary Research which com-

piles bibliographies, prepares abstracts and translations of selected articles, and makes complete reviews of the literature upon request. The package library services are free to physicians, who pay transportation charges, while the cost of bibliographies, abstracts, and translations is based upon the time spent by the research worker in preparing the data.

The question of clinical abstracts deserves mention in a paper that deals with the bibliographical experiences of the man practicing in the extra-metropolitan areas, and the author takes this opportunity of adding his voice to the many that have already been raised to emphasize the desirability and need of an American journal devoted to such abstracts.[2] The value of such a journal, it would appear, would depend largely upon the completeness with which the foreign literature, especially, was covered, and the journal could well be modeled after the excellent German *Zentralblätter*. While abstracts of many articles can be found in the various American and British journals at the present time (the abstract sections of the publications of the American Medical Association and of *Surgery, Gynecology and Obstetrics* are especially worthy of note), the system is too haphazard to be of very great value. In addition, abstracts are undoubtedly copied from one journal to another either in whole or in part, the abstracting is not usually kept up to date and actually serves more the purpose of "padding" a number than of furnishing systematized abstracts to the readers; and, finally, it is extremely difficult to locate an abstract of a given report by the present methods of indexing. Many of the libraries have developed services through which abstracts of specific reports will be prepared, but such abstracts are frequently unsatisfactory because of a lack of knowledge on the part of the abstractor as to what is actually important and what specific information is desired. They are, in addition, too expensive a luxury to be extensively indulged in. In the mass of medical literature that is being published at the present time, there is an acute need for the development of a well-edited clinical abstract journal whose editors would have the knowledge and courage to glean from the hundreds of printed reports those that are worth-while and those that can be passed by with the simple notation "Nothing new" or "Nothing of importance." The success of such attempts as the various "Yearbooks" attests to the real need of a regular journal. The author has had but indifferent assistance from the various commercial abstracting services.

[2] See: *Bull. Med. Libr. Ass'n*, 25: 35 and 146 (Sept., 1936).

In conclusion, then, the physician working at a distance from the larger medical libraries, as compared with his colleague in the metropolitan areas, at the present time need suffer only minor inconveniences in obtaining material for his reading or writing. With the development of photographic methods of reproduction,—not only of classic contributions and books that can now be consulted only with difficulty and by the favored few in the larger libraries, but also of desirable papers from the more obscure sources,—even these minor inconveniences will disappear, and the physician of the future will have available for his own use the resources of libraries the world over.

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AN EVALUATION OF MEDICAL PERIODICALS

JENNIE GREGORY, M.S.

PART I

THE evaluation of any literature, scientific or artistic, is a difficult matter. Whether a book or an article is pronounced good or bad depends much on the personal bias of the reviewer. In the main, the soundest test for all literature—be it the work of Shakespeare or of Harvey—is the test of time and use.

The evaluation of journals as organs of medical research is a somewhat different matter,—and yet, not so different, either. The test of time can be and indeed has been applied to them, for the shelves of medical libraries are burdened with many an age-yellowed sporadic journal and pamphlet—once the mouthpiece of some learned society. But nowadays new journals appear almost monthly, until even the richest libraries cannot afford them all; nor can the most indefatigable reader hope to do more than scan the contents of the more important journals. Today there are approximately 2,220 medical and biological periodicals, 511 of which are published in this country alone. It is this almost staggering amount of material that demands some evaluation, some sorting-out of the most useful publications.

Whoever makes such an attempt (and obviously the research man himself cannot wait for time to do this) must choose some criterion for estimating the usefulness of journals. Any criterion would necessarily be more or less arbitrary and open to criticism. The one chosen, in this survey, for evaluating the usefulness of the periodicals in a given field, was simply the frequency with which they were cited in bibliographies encompassing that field. There may be some objection to the evaluating of a journal's usefulness merely by counting the number of times it is cited by authorities in a given field. This method would seem to penalize the journal that offers many minor contributions. But such did not seem to be the case in endocrinology, the field that was used for a trial of the method (3). A fair evaluation of the journals in this field was obtained, and therefore the method was extended into the present survey. A similar determination of the value of periodicals in fields other than medicine has been carried out—in chemistry (5), mathematics (1), and geology (2). In medicine it has been done for

general medicine (4, 7), endocrinology (3), and endocrinology of sex (6).*

To be more specific as to method: bibliographies on the various subjects were obtained from suitable sources (usually from a single source to each field, but in some cases from a combination of sources), and the references to each journal were tabulated individually. The sources of the bibliographies vary somewhat from field to field but on the whole they are comparable. At first it was planned to use three sources of material: (1) Long bibliographies from recent books on the subject, such as Cameron's "Recent advances in endocrinology"; (2) Bibliographies from journals confined to a single field, such as the *American Journal of Roentgenology and Radium Therapy;* (3) Abstract journals. As the study developed it became apparent that the second of these sources was the best, for the bibliographies in journals were of later date than those in books of a survey nature, they contained more references, and were much more generally accessible. The third group was discarded altogether because of the tendency of abstract journals to give abstracts from journals that are to be obtained only with difficulty, to the exclusion of those of wide circulation. It was suggested that the *Quarterly Cumulative Index Medicus* would be a uniform source, but use of it would have defeated the purpose of the analysis,—namely, an evaluation based on *use;* for the *Quarterly Cumulative* lists all articles, while bibliographies presumably list only the articles actually used. The *Quarterly Cumulative* also lists articles only once, while an article, if it is really of value, may be referred to several times in the bibliographies.

In most cases, the references in one volume of a periodical were used, although in some cases two volumes were required to give a sufficient number. Each of the tabulations was based on more than 500 references. The minimum is actually higher than 500, since no references to a journal were counted unless that journal was referred to more than once. The average number of references (to all sources) is 990.

There was some question as to what should constitute an adequate number of references. The minimum of 500 was finally decided upon. That it was a good choice is borne out by the following results. After the tabulations were made, the number of references was correlated with the number of journals

*For a similar appraisal of dental periodicals, see Dr. Ingo Hackh's article in the preceding number of this BULLETIN, 25: 109. (Editor's note.)

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referred to. The correlation coefficient was $.738 \pm .064$. There is a relatively slow increase of the number of journals cited, in comparison with the increase of the number of references.[1] The largest tabulation for any one field was 2,500 references to 129 journals; and the smallest, 503 references to 73 journals. Clearly, the number of references and the number of journals referred to do not increase at the same rate.

The next question was: would the references yield a list of journals that would contain three-fourths of the important material? Jenkins (4) showed that the law of diminishing returns holds true for one who peruses all the literature in general medicine. Mengert (6) showed the operation of this law in the literature on the endocrinology of sex. This fact has been brought out again in a graph * which represented the average per cent. of articles in the number of journals. This graph showed that for the first two journals in the lists the average per cent. of articles to the average field is twenty-five per cent.; for the first eight, fifty per cent.; and for the first twenty-five, seventy-five per cent. Therefore compilation was made of comparatively short lists of journals that contain practically all of the literature relating to each field; consequently, the interesting conclusion is reached that one does not need to examine all the periodicals in a given field and allied fields to cover the subject adequately.

From the frequency tabulations mentioned above, the journals were arranged in the order of their importance for each field. For this publication, the lists have been shortened to twenty-five journals or less, but in every case they cover from two-thirds to three-fourths of the material.

This method of tabulation has the disadvantage of not giving any indication of the usefulness of abstract journals and journals with abstract sections. An attempt has been made to overcome

[1] The findings were as follows, listed in the ascending order of the number of references, and given in "round" numbers except in the cases of the largest and the smallest tabulations:

No. of fields	*No. of references*	*Journals referred to*
1	503	73
11	500 to 700	50 to 100
9	760 to 1000	50 to 100
3	1500 to 1600	120 to 150
1	1850	130
1	2475	335
1	2500	129

* Not reproduced, since the author's excellent summary gives us everything but the actual "curve" itself. (Editor's note.)

this lack by appending a list of such journals useful in each field. (See the comment following each table.)

In nearly every case the journal which was used in tabulating appears first in the list of journals for its field. This, at first glance, seems to indicate that writers publishing in a given journal are unduly partial in citing references to it and that the result is unfair to other journals. This conclusion has been demonstrated to be untrue in the case of other sciences, and there is no reason why medicine should be an exception.

The choice of fields to tabulate was a difficult problem, and the place of some in the list may be questioned. The criterion was again one of use. An attempt was made to include any field that might be useful by itself. For example, the study of diabetes is not a field in the sense that otolaryngology and surgery are; but there are clinics and research groups devoted exclusively to diabetes, and thus a section on journals of interest to these groups seems advisable. It is possible that other groups of equal importance have been omitted, but it is hoped that the omissions have been few. These lists, together with the abstract sources appended, should solve the problem of what to read to "keep up with the literature."

(*Text continued on p. 185*)

1. ANESTHESIA AND ANALGESIA

Rank	Journal	cum. % ref.
1.	Curr. Res. Anesth. & Analg.	10.0
2.	J. A. M. A.	18.5
3.	Am. J. Physiol.	23.1
4.	Zentralbl. f. Gynäk.	27.2
5.	Am. J. Surg.	31.2
6.	J. Pharmacol. & Exper. Therap.	35.0
7.	Arch. Surg.	38.6
8.	Surg., Gynec. & Obst.	41.9
9.	J. Am. Chem. Soc.	45.0
10.	Am. J. Obst. & Gynec.	47.6
11.	Brit. M. J.	49.2
11.	J. Lab. & Clin. Med.	51.7
12.	Deutsche med. Wchnschr.	54.1
12.	München. med. Wchnschr.	56.4
13.	Schmerz Narkose-Anaesth.	58.5
14.	Arch. f. exper. Path. u. Pharmakol.	60.1
14.	Arch. Int. Med.	61.7
14.	California & West. Med.	63.3
14.	Zentralbl. f. Chir.	64.9
15.	Ann. Surg.	66.4
15.	J. Biol. Chem.	67.9
15.	Proc. Roy. Soc. Med. (section on anesth.)	69.4
16.	Klin. Wchnschr.	70.8
16.	Proc. Staff Meet. Mayo Clin.	72.2
	50 others (26.7%)	98.9

Data from *Curr. Res. in Anesth. & Analg.*, vols. 10–12, 1931–1933. Tabulation of these data yielded 799 references to 74 journals.

Abstract sources for this field:
Internat. Abstr. Surg.
Curr. Res. in Anesth. & Analg.
Chem. Abstr.

2. SURGERY

Rank	Journal	cum. % ref.
1.	Arch. Surg.	7.9
2.	Ann. Surg.	15.7
2.	Surg., Gynec. & Obst.	23.5
3.	J. A. M. A.	30.5
4.	Arch. f. klin. Chir.	34.6
5.	Brit. M. J.	38.4
5.	Zentralbl. f. Chir.	42.2
6.	Am. J. Surg.	45.3
7.	Lancet	48.1
8.	Beitr. z. klin. Chir.	50.6
9.	Deutsche Ztschr. f. Chir.	55.4
10.	Am. J. M. Sc.	57.4
11.	Virchows Arch. f. path. Anat.	59.2
12.	München. med. Wchnschr.	60.8
13.	New England J. Med.	62.3
14.	Am. J. Physiol.	63.7
14.	Arch. Neurol. u. Psychiat.	65.1
14.	Deutsche med. Wchnschr.	66.5
14.	J. Urol.	67.9
15.	Brit. J. Surg.	69.2
16.	Proc. Soc. Exper. Biol. & Med.	70.3
16.	Surg. Clin. N. A.	71.4
17.	Am. J. Roentgenol.	72.4
17.	Bull. et Mem. Soc. d. Chirurgiens de Paris	73.4
17.	M. Rec.	74.4
17.	Ztschr. f. orthop. Chir.	75.4
	81 others (34.6%)	100.0

Data from *Arch. Surg.*, vol. 30, 1935. Tabulation of these data yielded 1000 references to 109 journals.

Abstract sources for this field:
Internat. Abstr. Surg.
J. Bone & Joint Surg.
Zentralbl. f. Chir.
Rev. de Chir.

3. BACTERIOLOGY

Rank	Journal	cum. % ref.
1.	J. Exper. Med.	12.7
2.	J. A. M. A.	21.2
3.	J. Infect. Dis.	28.6
4.	Zentralbl. f. Bakt.	35.3
5.	Ann. Inst. Pasteur	39.9
6.	J. Bact.	44.4
7.	Ztschr. f. Hyg. u. Infektionskr.	48.7
8.	Deutsche med. Wchnschr.	52.8
	J. J. Immunol.	55.9
10.	Proc. Soc. Exper. Biol. & Med.	58.8
11.	Pub. Health Rep.	61.5
12.	J. Med. Research	64.1
13.	J. Path. and Bact.	66.5
14.	Lancet	68.7
15.	Compt. rend. Soc. de Biol.	70.7
16.	Bull. Johns Hopkins Hosp.	72.6
16.	Klin. Wchnschr.	74.5
17.	Compt. rend. Acad. Sc.	76.3
18.	Am. J. Pub. Health	78.0
19.	Brit. M. J.	79.5
20.	J. Hyg.	81.0
21.	München. med. Wchnschr.	82.4
21.	Wien. klin. Wchnschr.	83.8
22.	Am. J. Hyg.	85.1
22.	Science	86.4
	104 others (13.4%)	99.8

Data from the "Textbook of bacteriology," by Zinsser and Bayne-Jones, 7th ed. (Appleton-Century, 1934). Tabulation of these data yielded 2507 references to 129 journals.

Abstract sources for this field:
Biol. Abstr.
Zentralbl. f. Bakt.

4. INFECTIOUS DISEASES

Rank	Journal	cum. % ref.
1.	J. Infect. Dis.	15.0
2.	J. Exper. Med.	26.8
3.	J. Bact.	32.1
4.	Zentralbl. f. Bakt.	37.0
5.	Compt. rend. Soc. de Biol.	41.5
6.	Proc. Soc. Exper. Biol. & Med.	45.3
7.	Ztschr. f. Hyg. u. Infektionskr.	48.8
8.	Arch. Inst. Past. Tunis	52.2
9.	J. A. M. A.	55.0
10.	J. Immunol.	57.5
11.	J. Am. Vet. M. A.	59.6
12.	Ann. Inst. Past.	61.5
13.	Brit. J. Exper. Path.	63.3
14.	Am. Rev. Tuberc.	65.0
15.	J. Path. and Bact.	66.6
15.	Klin. Wchnschr.	68.2
15.	Science	69.8
16.	J. Biol. Chem.	71.3
16.	J. Lab. and Clin. Med.	72.8
17.	J. Med. Research	74.0
18.	J. Prev. Med.	75.1
18.	Pub. Health Rep.	76.2
19.	Bull. Johns Hopkins Hosp.	77.2
20.	Am. J. Trop. Med.	78.1
20.	J. Am. Chem. Soc.	79.0
20.	Ztschr. f. Immunität.	79.9
	52 others (19.3%)	99.2

Data from the *J. Infect. Dis.*, vols. 54–56, 1934–35. Tabulation of these data yielded 883 references to 52 journals.

Abstract sources for this field:
Biol. Abstr. (since 1926)
Bact. Abstr. (prior to 1926)
Zentralbl. f. Bakt.

5. PARASITOLOGY

Rank	Journal	cum. % ref.
1.	J. Parasitology	16.7
2.	Am. J. Hyg.	32.5
3.	Parasitology	39.1
4.	Ann. Trop. Med.	43.1
5.	Science	46.0
6.	Am. J. Trop. Med.	48.2
6.	J. Am. Vet. M. A.	50.4
7.	Arch. f. Schiffs- u. Tropen-Hyg.	52.4
7.	J. Helminthol.	54.4
7.	Tr. Am. Micr. Soc.	56.4
8.	Ann. de Parasitol.	58.3
8.	Arch. Naturg.	60.2
8.	J. A. M. A.	62.1
9.	Ill. Biol. Monogr.	63.8
9.	Zool. Anz.	65.5
10.	Compt. rend. Soc. de Biol.	67.1
10.	Zool. J. Abt. Syst.	68.7
11.	Bull. Soc. Path. Exot.	70.0
12.	Biol. Bull.	71.2
12.	Proc. U. S. Nat. Mus.	72.4
13.	J. Exper. Med.	73.4
13.	Ztschr. f. Wissensch. Zool.	74.4
14.	Arch. Protistenk.	75.5
14.	Indian M. Gaz.	76.4
14.	J. Trop. Med.	77.3
14.	U. S. D. A. Bull.	78.2
	54 others (22.2%)	100.4

Data from the *J. Parasitology*, vols. 21–18, 1935–1932. Tabulation of these data yielded 695 references to 80 journals.

Abstract source for this field:
Zentralbl. f. Bakt.

6. CANCER.

Rank	Journal	cum. % ref.
1.	Am. J. Cancer	11.5
2.	Virchows Arch. f. path. Anat.	16.2
3.	Surg., Gynec. and Obst.	20.4
4.	Ztschr. f. Krebsforsch.	24.5
5.	J. A. M. A.	27.8
6.	Arch. Surg.	30.6
7.	Compt. rend. Soc. de Biol.	33.3
8.	Ann. Surg.	35.8
8.	J. Biol. Chem.	38.3
9.	J. Exper. Med.	40.7
9.	Lancet	43.1
10.	Arch. Path.	45.4
11.	Am. J. Obst. and Gynec.	47.3
11.	Beitr. z. path. Anat. u. z. allg. Path.	49.2
12.	Bull. Assoc. franç. p. l'étude du Cancer	51.0
13.	Am. J. M. Sc.	52.7
13.	Biochem. J.	54.4
14.	Beitr. z. klin. Chir.	56.0
15.	Proc. Soc. Exper. Biol. and Med.	57.5
16.	Zentralbl. f. Gynäk.	58.9
17.	Arch. f. Gynäk.	60.2
17.	Biochem. Ztschr.	61.5
18.	Arch. f. exper. Zellforsch.	62.7
19.	Arch. Int. Med.	63.8
19.	Canad. M. A. J.	64.9
19.	J. Path. and Bact.	66.0
19.	Klin. Wchnschr.	67.1
	81 others (33.0%)	100.1

Data from the *Am. J. Cancer*, vols. 23–24, 1935. Tabulation of these data yielded 1014 references to 81 journals.

Abstract sources for this field:
Am. J. Cancer
Ztschr. f. Krebsforsch.
Internat. Abstr. Surg.
Cancer Rev.

7. RADIOLOGY

Rank	Journal	cum. % ref.
1.	Am. J. Roentgenol.	9.9
2.	J. A. M. A.	19.3
3.	Radiology	26.2
4.	Fortsch. a. d. Geb. d. Röntgenstrahlen	32.1
5.	Surg., Gynec. and Obst.	35.6
6.	Acta Radiol.	38.5
7.	Arch. Surg.	41.2
8.	Am. J. Cancer	43.5
8.	Am. J. Dis. Child.	47.8
9.	Arch. Int. Med.	49.9
10.	Ann. Surg.	51.8
10.	Radiol. Med.	53.7
11.	Am. J. M. Sc.	55.2
11.	Am. J. Surg.	56.7
11.	Bull. et Mem. Soc. méd. d. Hôp. de Paris	58.2
11.	Virchows Arch. f. path. Anat.	59.7
12.	Beitr. z. klin. Tuberk.	61.0
12.	Brit. M. J.	62.3
12.	J. de Radiol. et d'Electrol.	63.6
12.	Röntgenpraxis	64.9
12.	Vestnik roentgen. i rad.	66.2
13.	Lancet	67.3
14.	Am. J. Path.	68.2
14.	Am. Rev. Tuberc.	69.1
14.	J. Bone and Joint Surg.	70.0
14.	J. Thoracic Surg.	70.9
14.	Rev. Neurol.	71.8
14.	Strahlentherapie	72.7
	54 others (28.8%)	101.5

Data from *Radiology*, vol. 25, 1935. Tabulation of these data yielded 524 references to 82 journals.

Abstract sources for this field:
Am. J. Roentgenology
Radiology
Internat. Abstr. Surg.
Fortschr. a. d. G. d. Röntgenstr.

8. ROENTGENOLOGY

Rank	Journal	cum. % ref.
1.	Am. J. Roentgenol.	13.8
2.	J. A. M. A.	25.6
3.	Radiology	31.7
4.	Ann. Surg.	36.4
5.	Surg., Gynec. and Obst.	40.2
6.	J. Bone and Joint Surg.	43.6
7.	Arch. Surg.	46.6
8.	J. Urol.	49.3
9.	Am. J. Dis. Child.	51.8
10.	Wien. klin. Wchnschr.	54.1
11.	Am. J. M. Sc.	56.2
11.	Brit. M. J.	58.3
12.	Am. J. Cancer	60.2
12.	New England J. Med.	62.1
12.	Strahlentherapie	64.0
13.	Arch. Int. Med.	65.7
14.	Am. Rev. Tuberc.	67.2
14.	Brit. J. Radiol.	68.7
14.	Lancet	70.2
14.	München. med. Wchnschr.	71.7
15.	Arch. f. klin. Chir.	73.0
16.	Acta Radiol.	74.1
	49 others (27.9%)	102.0

Data from the *Am. J. Roentgenol. & Radium Therapy*, vol. 34, 1935. Tabulation of these data yielded 528 references to 71 journals.

Abstract sources for this field:
Am. J. Roentgenol.
Radiology
Internat. Abstr. Surg.
J. Bone & Joint Surg.
Fortschr. a. d. G. d. Röntgenstr.

9. CARDIOLOGY

Rank	Journal	cum. % ref.
1.	Am. Heart J.	13.9
2.	J. A. M. A.	25.9
3.	Arch. Int. Med.	37.3
4.	Am. J. M. Sc.	46.1
5.	J. Clin. Investigation	51.7
6.	New England J. Med.	54.0
7.	München. Med. Wchnschr.	56.2
8.	Ztschr. f. klin. Med.	58.4
8.	Proc. Soc. Exper. Biol. and Med.	60.4
8.	Quart. J. Med.	62.4
9.	Ann. Int. Med.	64.0
9.	J. Exper. Med.	65.6
9.	Klin. Wchnschr.	67.2
9.	Med. Klin.	68.8
9.	Tr. A. Am. Physicians	70.4
10.	Am. J. Physiol.	71.9
10.	Med. Clin. N. A.	73.4
11.	Am. J. Path.	74.7
12.	Clin. Sc.	75.8
12.	Lancet	76.9
12.	Medicine	77.0
12.	South. M. J.	78.1
13.	Arch. f. exper. Path. u. Pharmakol.	79.1
13.	J. Biol. Chem.	80.1
	37 others (18.5%)	98.6

Data from "The diagnosis and treatment of diseases of heart," by Christian (Oxford univ. pr., 1935); and "Diseases of the heart and blood vessels," by Wolferth, in *Progressive Medicine*, vol. 3 (Lea & Febiger, 1931). Tabulation of these data yielded 605 references to 61 journals.

Abstract sources for this field:
Am. Heart J.
Zentralbl. f. Herz. u. Gefass. Krankh.
Arch. des Mal. du Coeur

10. HEMATOLOGY

Rank	Journal	cum. % ref.
1.	J. A. M. A.	10.3
2.	Arch. Int. Med.	18.9
3.	J. Exper. Med.	26.8
4.	Am. J. M. Sc.	32.2
5.	Deutsche Arch. f. klin. Med.	36.2
6.	Ztschr. f. klin. Med.	39.9
7.	Am. J. Physiol.	43.5
8.	Bull. Johns Hopkins Hosp.	46.9
9.	New England J. Med.	50.0
10.	Lancet	53.0
11.	Deutsche med. Wchnschr.	55.2
11.	Klin. Wchnschr.	57.4
11.	München. med. Wchnschr.	59.6
12.	J. Med. Research	61.5
13.	Folia Haemat.	63.2
14.	Brit. M. J.	64.8
15.	J. Physiol.	66.3
15.	Virchows Arch. f. path. Anat.	67.8
16.	Quart. J. Med.	69.2
17.	Compt. rend. Soc. de Biol.	70.5
17.	J. Path. and Bact.	71.8
17.	Med. Klin.	73.1
18.	Arch. f. exper. Path. u. Pharmakol.	74.2
18.	Jahrb. f. Kinderh.	75.3
18.	J. Biol. Chem.	76.4
	58 others (23.6%)	100.0

Data from "Diseases of the blood" (by various authors), in *Oxford Medicine*. Tabulation of these data yielded 801 references to 83 journals.

Abstract sources for this field:
Am. Heart J.
Folia Haematol.
Zentralbl. f. Herz. u. Gefass. Krankh.
Ztschr. f. Kreislauf.
Arch. des Mal. du Coeur

11. DERMATOLOGY AND SYPHILOLOGY

Rank	Journal	cum. % ref.
1.	Arch. Dermat. and Syph.	23.3
2.	Arch. Dermat. u. Syph.	31.8
3.	J. A. M. A.	39.1
4.	Brit. J. Dermat. and Syph.	42.1
4.	Klin. Wchnschr.	45.1
5.	Ann. de Dermat. et. Syph.	47.8
6.	Bull. Soc. franç. de Dermat. et Syph.	49.8
6.	Dermat. Wchnschr.	51.8
6.	München. med. Wchnschr.	53.8
7.	Arch. Int. Med.	55.7
7.	Deutsche med. Wchnschr.	57.6
8.	Lancet	59.4
9.	Dermat. Ztschr.	61.0
10.	Zentralbl. f. Haut- u. Geschlechtskr.	62.3
11.	Am. J. M. Sc.	63.5
11.	Arch. Neurol. and Psychiat.	64.7
12.	Bull. Johns Hopkins Hosp.	65.8
13.	Brit. M. J.	66.8
13.	Folia Haematol.	67.8
13.	N. Y. State J. M.	68.8
13.	Virchows Arch. f. path. Anat.	69.8
14.	Am. J. Syph. and Neurol.	70.7
14.	J. Infect. Dis.	71.6
14.	Med. Klin.	72.5
14.	Med. Rec.	73.4
14.	Presse Méd.	74.3
	72 others (25.0%)	99.3

Data from *Arch. Dermatol. & Syphilol.*, vols. 30–31, 1934–35. Tabulation of these data yielded 894 references to 99 journals.

Abstract sources for this field:
Arch. Derm. & Syph.
Urol. & Cutan. Rev.
Am. J. Syph.
Dermat. Zentralbl.
Zentralbl. f. Haut- u. Geschlecht.

12. ALLERGY

Rank	Journal	cum. % ref.
1.	J. Allergy	29.0
2.	J. A. M. A.	44.0
3.	J. Lab. and Clin. Med.	49.6
4.	J. Immunol.	54.0
5.	Am. J. M. Sc.	57.8
6.	Arch. Int. Med.	61.4
7.	Arch. Dermat. and Syph.	64.0
8.	Compt. rend. Soc. de Biol.	65.6
8.	Illinois M. J.	67.2
8.	Med. Rec.	69.8
8.	Proc. Soc. Exper. Biol. and Med.	71.4
9.	Ann. Int. Med.	74.5
10.	Am. J. Dis. Child.	75.8
10.	J. Exper. Med.	77.1
10.	Lancet	78.4
10.	New England J. Med.	79.7
11.	Am. J. Physiol.	80.7
11.	California and West. Med.	81.7
11.	Presse Méd.	82.7
12.	Biochem. Ztschr.	83.5
12.	Canad. M. A. J.	84.3
12.	J. Biol. Chem.	85.1
12.	Klin. Wchnschr.	85.9
12.	Texas State J. Med.	86.7
	31 others (14.2%)	100.9

Data from the *J. of Allergy*, vol. 6, nos. 2–5, 1935; and "Allergy in general practice," by Feinberg (Lea & Febiger, 1934). Tabulation of these data yielded 613 references to 56 journals.

Abstract source for this field:
J. of Allergy (after 1935)

13. OTOLARYNGOLOGY

Rank	Journal	cum. % ref.
1.	Arch. Otolaryngol.	13.4
2.	Ann. Otol., Rhin. and Laryngol.	23.7
3.	Laryngoscope	30.1
3.	Ztschr. f. Hals-, Nasen- u. Ohrenh.	36.5
4.	J. A. M. A.	41.7
5.	J. Laryngol. and Otol.	45.9
6.	J. Allergy	49.8
7.	Acta Oto-laryng.	52.0
7.	Monatschr. f. Ohrenh.	54.7
8.	Ann. d'oto-laryng.	56.8
9.	Am. J. M. Sc.	58.7
10.	Lancet	60.5
10.	Surg., Gynec. and Obst.	62.3
11.	Ann. Surg.	64.0
11.	Arch. ital. di Otol.	65.7
12.	Zentralbl. f. Hals-, Nasen-, u. Ohrenh.	67.1
13.	Arch. f. Ohren-, Nasen- u. Kehlk.	68.3
14.	Arch. Int. Med.	69.4
14.	Beitr. z. prakt. u. theoret. Hals-, Nasen- u. Ohrenh.	71.6
14.	Brit. M. J.	72.7
14.	Virchows Arch. f. path. Anat.	73.8
15.	Arch. f. d. ges. Physiol.	74.8
15.	Arch. Path.	75.8
15.	Tr. Am. Laryng., Rhin. and Otol. Soc.	76.8
	62 others (24.8%)	100.6

Data from *Arch. Otolaryngology*, nine months' issues chosen at random from vols. 18–20, 1933–34. Tabulation of these data yielded 717 references to 88 journals.

Abstract sources for this field:
Arch. Otolaryn.
Ann. Otol., Rhin., & Laryn.
J. Laryngol. & Otol.

14. ENDOCRINOLOGY

Rank	Journal	cum. % ref.
1.	Am. J. Physiol.	9.1
2.	Compt. rend. Soc. de Biol.	17.2
3.	Endocrinol.	24.5
4.	Proc. Soc. Exper. Biol. and Med.	30.2
5.	Klin. Wchnschr.	34.2
6.	Arch. f. exper. Path. u. Pharmakol.	38.0
7.	J. Biol. Chem.	41.8
8.	Endokrinol.	45.3
9.	J. A. M. A.	48.8
9.	J. Physiol.	52.3
10.	Ztschr. f. d. ges. exper. Med.	55.1
11.	Biochem. Ztschr.	57.6
12.	Arch. Int. Med.	60.1
13.	Canad. M. A. J.	62.1
14.	J. Pharmacol. and Exper. Therap.	64.0
15.	Arch. f. Gynäk.	65.7
16.	Am. J. M. Sc.	66.4
17.	Brit. M. J.	67.9
18.	Biochem. J.	69.4
18.	Lancet	70.9
19.	Arch. f. d. ges. Physiol.	72.1
19.	Zentralbl. f. Gynäk.	73.3
20.	J. Clin. Investigation	74.3
21.	Proc. Roy. Soc. Med.	75.2
22.	Rev. Soc. Argent. de Biol.	76.1
	100 others (23.4%)	99.5

Data from "Recent advances in endocrinology," by Cameron (Blakiston, 1934); and from the author's bibliographies on various phases of endocrinology. Tabulation of these data yielded 1619 references to 125 journals.

Abstract sources for this field:
Endocrinology
Endokrinologie
Physiol. Abstr.

15. DIABETES

Rank	Journal	cum. % ref.
1.	J. A. M. A.	12.3
2.	Arch. Int. Med.	21.4
3.	New England J. Med.	28.9
4.	J. Biol. Chem.	36.1
5.	Am. J. M. Sc.	43.0
6.	Klin. Wchnschr.	47.0
7.	Am. J. Physiol.	50.5
8.	J. Clin. Investigation	52.8
9.	Ann. Int. Med.	54.7
10.	Bull. Johns Hopkins Hosp.	56.5
10.	Endocrinol.	58.1
11.	Proc. Soc. Exper. Biol. and Med.	59.8
12.	Acta Med. Scandinav.	61.3
12.	Brit. M. J.	62.8
12.	J. Metab. Research	64.3
13.	Canad. M. A. J.	65.7
14.	J. Physiol.,	67.0
14.	Quart. J. Med.	68.3
15.	Lancet	69.4
15.	Med. Clin. No. Am.	70.5
15.	Proc. Staff Meet. Mayo Clin.	71.6
15.	Ztschr. f. klin. Med.	72.7
16.	Am. J. Dis. Child.	73.7
16.	Arch. f. exper. Path. u. Pharmakol.	74.7
16.	Deutsche med. Wchnschr.	75.7
	64 others (24.2%)	99.9

Data from "The treatment of diabetes mellitus," by Joslin (Lea & Febiger, 1935). Tabulation of these data yielded 926 references to 89 journals.

XUM

16. THYROID

Rank	Journal	cum. % ref.
1.	J. Biol. Chem.	7.3
2.	Biochem. Ztschr.	12.1
3.	Brit. M. J.	16.8
3.	J. A. M. A.	21.5
4.	Am. J. Physiol.	25.4
4.	Arch. Int. Med.	29.3
4.	Compt. rend. Soc. de Biol.	33.2
5.	Arch. f. exper. Path. u. Pharmakol.	36.2
6.	Am. J. M. Sc.	39.0
6.	Biochem. J.	41.8
7.	Ztschr. f. physiol. Chem.	44.4
7.	Proc. Soc. Exper. Biol. and Med.	47.0
8.	Deutsche med. Wchnschr.	49.4
9.	J. Exper. Med.	51.6
9.	J. Physiol.	53.8
9.	Surg., Gynec. and Obst.	56.0
10.	Klin. Wchnschr.	58.1
10.	Bull. Johns Hopkins Hosp.	60.2
11.	Arch. f. klin. Chir.	62.1
11.	Endocrinol.	64.0
11.	München. med. Wchnschr.	65.9
12.	Ann. Surg.	67.4
12.	Arch. f. d. ges. Physiol.	68.7
13.	J. Pharmacol. and Exper. Therap.	70.0
13.	Lancet	71.3
13.	Quart. J. Exper. Physiol.	72.6
	47 others (27.4%)	100.0

Data from "The thyroid gland," by Harington (Oxford, 1933); and "Diagnosis and treatment of diseases of the thyroid gland," by Crile (Saunders, 1932). Tabulation of these data yielded 537 references to 73 journals.

17. ENDOCRINOLOGY OF SEX (MENGERT'S DATA)

Rank	Journal	cum. % ref.
1.	Am. J. Physiol.	6.8
2.	Compt. rend. Soc. de Biol.	12.6
3.	Proc. Soc. Exper. Biol. and Med.	17.6
4.	Anat. Rec.	22.3
5.	Am. J. Anat.	26.6
6.	J. Exper. Zoöl.	30.6
7.	Arch. f. Gynäk.	33.6
8.	Endocrinol.	36.1
9.	Klin. Wchnschr.	38.3
10.	Proc. Roy. Soc. London	40.4
11.	Zentralbl. f. Gynäk.	42.5
12.	J. A. M. A.	44.5
13.	J. Physiol.	46.1
14.	Biol. Bull. Marine Biol. Lab.	47.6
15.	Bull. Johns Hopkins Hosp.	49.0
16.	Brit. J. Exper. Biol.	50.4
16.	Carnegie Institute of Washington, Publ.	51.7
17.	Arch. f. d. ges. Physiol.	53.1
17.	Arch. f. Entwicklungsmech. d. Organ.	54.3
18.	Am. Naturalist	55.5
	315 others (44.5%)	100.0

Data for this list, and the list itself, are quoted from Mengert, "Periodicals on the endocrinology of sex," *Endocrinol.*, **18**: 421–22 (1934). This list represents 2474 references to 335 journals.

Abstract sources for this field:
Endokrinol.
Endocrinol.
Zentralbl. f. Gynäk.
Chem. Abstr.
Physiol. Abstr.
J. Obst. & Gynaec. (British)

18. OBSTETRICS AND GYNECOLOGY

Rank	Journal	cum. % ref.
1.	Am. J. Obst. and Gynec.	18.0
2.	Zentralbl f. Gynäk.	28.7
3.	J. A. M. A.	36.3
4.	Arch. f. Gynäk.	41.6
5.	Surg., Gynec. and Obst.	46.4
6.	Am. J. Physiol.	50.1
7.	J. Obst. and Gynaec. Brit. Emp.	53.4
8.	Lancet	56.4
9.	Brit. M. J.	59.0
10.	Proc. Soc. Exper. Biol. and Med.	61.0
11.	Ztschr. f. Geburtsh. u. Gynäk.	62.8
12.	Klin. Wchnschr.	64.6
13.	Endocrinol.	66.1
14.	Monatschr. f. Geburtsh. u. Gynäk.	67.5
15.	Carnegie Inst. Contrib. to Embryol.	68.8
16.	J. Biol. Chem.	70.0
17.	München. med. Wchnschr.	70.9
18.	Am. J. Roentgenol.	71.7
18.	Bull. Johns Hopkins Hosp.	72.5
18.	New England J. Med.	73.3
19.	Am. J. Dis. Child.	74.1
19.	Am. J. Anat.	74.9
20.	Anat. Rec.	75.6
20.	Arch. Int. Med.	76.3
20.	Gynéc. et Obst.	77.0
20.	Jap. J. Obst. and Gynec.	77.7
	93 others (22.2%)	99.9

Data from the *Am. J. Obst. & Gynec.*, vol. 29, 1935. Tabulation of these data yielded 1555 references to 119 journals.

Abstract sources for this field:
Am. J. Obst. & Gynec.
Internat. Abstr. Surg.
Zentralbl. f. Gynäk.
J. Obst. & Gynaec. (British)

19. NERVOUS AND MENTAL DISEASES

Rank	Journal	cum. % ref.
1.	Arch. Neurol. and Psychiat.	13.3
2.	Zentralbl. f. d. ges. Neurol. u. Psychiat.	22.9
3.	J. A. M. A.	27.9
4.	J. Nerv. and Ment. Dis.	32.5
5.	Am. J. Psychiat.	36.3
6.	Deut. Ztschr. f. Nervenheilk.	39.8
7.	Brain	42.7
7.	Rev. Neurol.	45.6
8.	Am. J. Physiol.	48.4
9.	Arch. f. Psych. u. Nervenkr.	50.9
10.	Monatschr. f. Psychiat. u. Neurol.	53.2
11.	Arch. Int. Med.	55.2
11.	Klin. Wchnschr.	57.2
11.	München. med. Wchnschr.	59.2
12.	Am. J. M. Sc.	60.9
12.	Assoc. f. Res. in Nerv. and Ment. Dis.	62.6
13.	Deutsche med. Wchnschr.	64.0
13.	Wien. Klin. Wchnschr.	65.4
14.	Lancet	66.6
14.	Med. Rec.	67.8
14.	New England J. Med.	69.0
15.	Arch. f. d. ges. Physiol.	69.9
15.	Internat. Ztschr. f. Psychoanal.	70.8
15.	Med. Klin.	71.7
15.	Surg., Gynec. and Obst.	72.6
15.	Virchows Arch. f. path. Anat.	73.5
	61 others (26.6%)	100.1

Data from the *J. Nerv. & Ment. Dis.*, vols. 79–81, 1934–35. Tabulation of these data yielded 655 references to 87 journals.

Abstract sources for this field:
Psychol. Index (suspended)
Psychol. Abstr.
J. f. Psych. u. Neur.
J. Nerv. & Ment. Dis.
Arch. Neur. & Psychiatry
Neurol. Zentralbl.
Zentralbl. f. d. ges. Neurol. u. Psychiat.

20. NUTRITION

Rank	Journal	cum. % ref.
1.	J. Biol. Chem.	22.8
2.	Am. J. Physiol.	30.1
3.	J. Nutrition	36.8
4.	Biochem. J.	41.6
5.	Proc. Soc. Exper. Biol. and Med.	45.0
6.	Compt. rend. Soc. de Biol.	47.7
7.	J. Physiol. Chem.	50.2
8.	Biochem. Ztschr.	52.3
9.	J. Physiol.	54.3
10.	Science	56.3
10.	Am. J. Dis. Child.	58.3
11.	Arch. Int. Med.	60.1
12.	Physiol. Rev.	61.6
13.	J. A. M. A.	63.0
13.	J. Agric. Research	64.4
14.	J. Clin. Investigation	65.6
15.	Arbeitsphysiol.	66.7
16.	Arch. f. d. ges. Physiol.	67.8
16.	Bull. Soc. Chim. Biol.	68.9
16.	Indian J. M. Research	69.0
17.	J. Am. Chem. Soc.	70.1
17.	Klin. Wchnschr.	71.2
17.	New England J. Med.	72.3
18.	Univ. Mo. Ag. Exp. St. Res. Bull.	73.2
19.	Ztschr. f. Biol.	74.0
	124 others (25%)	99.0

Data from the *J. Nutr.*, vols. 7, 8, 1933–34. Tabulation of these data yielded 1508 references to 149 journals.

Abstract source for this field:
Nutr. Abstr. & Rev.

21. VITAMINS

Rank	Journal	cum. % ref.
1.	J. Biol. Chem.	20.4
2.	Biochem. J.	37.4
3.	Proc. Soc. Exper. Biol. and Med.	41.9
4.	Am. J. Physiol.	45.8
4.	J. A. M. A.	49.7
5.	Lancet	53.4
6.	Pub. Health Rep.	56.3
7.	Brit. M. J.	58.7
8.	J. Nutrition	60.6
9.	Am. J. Dis. Child.	62.5
9.	Biochem. Ztschr.	64.4
10.	Arch. f. d. ges. Physiol.	65.8
11.	Ztschr. f. Physiol. Chem.	67.0
12.	Sp. Rep. Ser., Med. Res. Council	68.1
13.	Indust. and Engin. Chem.	69.2
13.	J. Path. and Bact.	70.3
13.	Science	71.4
14.	Compt. rend. Acad. des Sc.	72.4
14.	Indian J. Med. Research	73.4
15.	J. Hyg.	74.3
16.	J. Am. Chem. Soc.	75.2
17.	J. Physiol.	76.0
18.	Proc. Roy. Soc. Med.	76.7
19.	Bull. Soc. Chim. Biol.	77.4
19.	Klin. Wchnschr.	78.1
	105 others (21.6%)	98.7

Data from "The Vitamins: a symposium on the present status of the knowledge of the vitamins," by various authors (A. M. A., 1932); and "Vitamins: a survey of recent knowledge" published under the direction of the Medical Research Council of Great Britain (His Maj.'s stat. off., 1932). Tabulation of these data yielded 1869 references to 130 journals.

Abstract source for this field:
Nutr. Abstr. & Rev.

XUM

Neurol. Zentralbl.
Zentralbl. f. d. ges. Neurol. u. Psychiat.

22. GASTRO-ENTEROLOGY

Rank	Journal	cum. % ref.
1.	J. A. M. A.	13.5
2.	Am. J. Dig. Dis. and Nutr.	19.8
3.	Am. J. Surg.	27.7
4.	Am. J. Physiol.	32.8
5.	Arch. Int. Med.	37.7
6.	Lancet	42.3
7.	Ann. Surg.	46.1
8.	Am. J. M. Sc.	49.3
8.	Brit. M. J.	52.5
9.	Ann. Int. Med.	55.5
10.	Am. J. Roentgenol.	58.0
11.	Surg., Gynec. and Obst.	60.3
12.	Arch. f. Verdauungskr.	62.2
12.	Arch. Surg.	64.1
12.	Klin. Wchnschr.	66.0
13.	Guy's Hosp. Rep.	67.3
13.	New England J. Med.	68.6
13.	South. M. J.	69.9
14.	J. Physiol.	71.0
14.	Quart. J. Med.	72.1
14.	Radiology	73.2
14.	Ztschr. f. ges. exper. Med.	74.3
15.	Acta Chir. Scand.	75.2
15.	Bull. Johns Hopkins Hosp.	76.1
15.	Deutsche med. Wchnschr.	77.0
15.	M. J. Australia	77.9
15.	München. med. Wchnschr.	78.8
15.	Physiol. Rev.	79.7
	45 others (21.4%)	101.4

Data from *Oxford Medicine;* Emery, *New Engl. J. Med.*, **212**: 680 (1935); Cheney, *Arch. Int. Med.*, **56**: 797 (1935); Rehfuss, *Progressive Medicine*, vol. 4 (1931); *Rev. Gastroenterol.*, vols. 1 & 2, 1934-35; *Am. J. Dig. Dis. & Nutr.*, Sept., 1935. Tabulation of these data yielded 524 references to 73 journals.

Abstract sources for this field:
Rev. Gastroenterol.
Arch. f. Verdauungskr.
Arch. des Mal. de l'App. Dig.

23. DISEASES OF CHILDREN

Rank	Journal	cum. % ref.
1.	Am. J. Dis. Child.	12.0
2.	J. A. M. A.	23.1
3.	J. Biol. Chem.	31.7
4.	Arch. Int. Med.	35.7
5.	J. Exper. Med.	39.3
6.	Lancet	42.7
7.	J. Clin. Investigation	45.8
8.	Am. J. M. Sc.	48.7
9.	J. Pediat.	51.3
10.	Arch. Pediat.	53.7
11.	New England J. Med.	55.7
12.	Am. J. Obst. and Gynec.	57.3
12.	Ztschr. f. Kinderh.	59.1
13.	Brit. M. J.	60.7
13.	Jahrb. f. Kinderh.	62.3
13.	J. Immunol.	63.9
13.	Wien. klin. Wchnschr.	65.5
14.	Ann. Int. Med.	66.9
14.	Arch. Dis. Child.	68.3
14.	J. Lab. and Clin. Med.	69.7
14.	Monatschr. f. Kinderh.	71.1
15.	Proc. Soc. Exper. Biol. and Med.	72.3
15.	Zentralbl. f. d. ges. Neurol u. Psych.	73.5
	50 others (26.0%)	99.5

Data from the *Am. J. Dis. Child.*, vol. 50, nos. 1 & 2, 1935; *Arch. Pediat.*, vol. 52, Jan.-Mar., 1935; *J. Pediat.*, vol. 7, Aug. & Sept., 1935. Tabulation of these data yielded 503 references to 73 journals.

Abstract sources for this field:
Child Devel. Abstr.
Arch. Pediat.
Am. J. Dis. Child.
Brit. J. Dis. Child.
Arch. de Med. des. Enf.

24. GROWTH AND DEVELOPMENT

Rank	Journal	cum. % ref.
1.	Am. J. Dis. Child.	12.4
2.	Am. J. Physiol.	18.0
3.	J. A. M. A.	22.7
4.	Am. J. Phys. Anthropol.	27.0
5.	J. Exper. Med.	31.0
6.	Am. J. Anat.	34.1
7.	J. Biol. Chem.	36.6
7.	Ztschr. f. Kinderh.	39.1
8.	Dent. Cosmos	41.5
8.	Endocrinol.	43.9
9.	Anat. Rec.	46.1
10.	Proc. Soc. Exper. Biol. and Med.	48.2
11.	Arch. Int. Med.	50.1
11.	Physiol. Rev.	52.0
12.	J. Immunol.	53.8
13.	Ergeb. d. inn. Med. u. Kinderh.	55.4
14.	Klin. Wchnschr.	56.9
14.	Lancet	58.4
15.	Arch. Pediat.	59.7
15.	Science	61.0
16.	Ztschr. f. Schulgesundhpflg.	62.2
17.	Pub. Health Rep.	63.2
18.	Anat. Anz.	64.1
18.	Arch. Kinderh.	65.0
18.	Internat. J. Orthod. and Oral Surg.	65.9
18.	Monat. f. Kinderh.	66.8
18.	New England J. Med.	67.7
	72 others (32.5%)	100.2

Data from the *White House Conference*, Parts 1 & 2 (Appleton-Century, 1932); "Growth changes in bodily size and proportion during first three years," by Bayley and Davis (*Biometrika*, **27**: 26, 1935). Tabulation of these data yielded 678 references to 99 journals.

Abstract sources for this field:
Child. Devel. Abstr.
Am. J. Dis. Child.
[Listings for Diseases of Children]

25. PUBLIC HEALTH AND HYGIENE

Rank	Journal	cum. % ref.
1.	Am. J. Hyg.	11.8
2.	J. A. M. A.	19.7
3.	Am. J. Pub. Health	25.8
3.	J. Infect. Dis.	31.9
4.	J. Exper. Med.	36.1
5.	Proc. Soc. Exper. Biol. and Med.	40.0
6.	Pub. Health Rep.	43.8
7.	J. Bact.	46.3
7.	J. Path. and Bact.	48.8
8.	Compt. rend. Soc. de Biol.	51.2
9.	Am. Rev. Tuberc.	53.3
10.	Am. J. Trop. Med.	55.1
10.	Brit. J. Exper. Path.	56.9
11.	Lancet	58.6
12.	J. Prev. Med.	60.1
13.	Zentralbl. f. Bakt.	61.5
14.	Ann. Inst. Pasteur	62.8
14.	J. Immunol.	64.1
14.	Science	65.4
15.	Am. J. Path.	66.5
16.	Am. J. Dis. Child.	67.5
16.	J. Parasitol.	68.5
17.	Compt. rend. Acad. des Sc.	69.4
17.	J. Biol. Chem.	70.3
17.	J. Hyg.	71.2
17.	J. Lab. and Clin. Med.	72.1
17.	Pub. Health Bull.	73.0
	63 others (27.8%)	100.8

Data from the *Am. J. Hyg.*, vol. 21, 1935; and the *Am. J. Pub. Health*, vol. 24, 1934. Tabulation of these data yielded 871 references to 90 journals.

Abstract sources for this field:

Bull. Hyg.
Arch. f. Schiffs- u. Tropen-Hyg.
Pub. Health Engin. Abstr.
Zentralbl. f. d. ges. Hyg.

26. INDUSTRIAL HYGIENE

Rank	Journal	cum. % ref.
1.	J. Indust. Hyg.	16.7
2.	J. A. M. A.	21.2
3.	Lancet	25.1
4.	Arch. f. Hyg.	28.5
4.	Pub. Health Bull.	31.9
5.	Biochem. Ztschr.	34.7
5.	Pub. Health Rep.	37.5
6.	Zentralbl. f. Gewerbehyg.	39.8
7.	Am. Rev. Tuberc.	42.0
7.	M. J. Australia	44.2
8.	München. med. Wchnschr.	46.2
9.	J. Biol. Chem.	48.1
10.	Deutsche med. Wchnschr.	49.8
10.	J. Pharmacol. & Exper. Therap.	51.5
11.	Arch. f. Gewerbepath. u. Gewerbehyg.	53.1
11.	Brit. M. J.	54.7
11.	J. Hyg.	56.3
11.	J. Soc. Chem. Ind.	57.9
12.	Ztschr. f. Hyg. u. Infektionskr.	59.3
13.	Am. J. Physiol.	60.5
13.	Compt. rend. Soc. de Biol.	61.7
13.	Nature	62.9
13.	Ztschr. f. angew. Chem.	63.1
14.	Klin. Wchnschr.	64.2
14.	Am. J. Hyg.	65.3
14.	Protoplasma	66.4
14.	Ztschr. f. Krebsforschung	67.5
14.	Ztschr. f. Urol.	68.6
	52 others (30.6%)	99.2

Data from the *J. Indust. Hyg.*, vols. 14–15, 1932–33. Tabulation of these data yielded 646 references to 80 journals.

Abstract sources for this field:

J. Indust. Hyg.
Pub. Health Engin. Abstr.
Bibliog. Indust. Hyg.
Zentralbl. f. Gewerbehyg.

27. UROLOGY

Rank	Journal	cum. % ref.
1.	J. Urol.	16.3
2.	J. A. M. A.	25.6
3.	Surg., Gynec. & Obst.	33.5
4.	Ann. Surg.	38.0
5.	Lancet	42.3
6.	Ztschr. f. urol. Chir.	46.1
7.	Brit. M. J.	49.4
8.	Am. J. Surg.	52.3
9.	New England J. Med.	54.9
10.	Urol. & Cutan. Rev.	57.2
11.	Ztschr. f. Urol.	59.4
12.	J. d'Urol.	61.4
13.	Arch. f. klin. Chir.	63.0
14.	Arch. Surg.	64.3
14.	J. Biol. Chem.	65.6
14.	Klin. Wchnschr.	66.9
15.	Brit. J. Surg.	68.1
15.	Med. Rec.	69.3
16.	California & West. Med.	70.3
17.	Brit. J. Urol.	71.2
17.	München. med. Wchnschr.	72.1
17.	Tr. Am. A. Genito-urin. Surg.	73.0
17.	Virchows Arch. f. path. Anat.	73.9
	55 others (27.1%)	101.0

Data from the *J. Urology*, vols. 32–33, 1934–35. Tabulation of these data yielded 817 references to 79 journals.

Abstract sources for this field:

Internat. Abstr. Surg.
Brit. J. Urol.
Urol. & Cutan. Rev.
J. d'Urol.

XUM

PART 2

The foregoing Tables (1–27) answer primarily the needs of the specialist in his attempt to keep adequately abreast of the literature in his field. Two further Tables have been compiled, to indicate to the medical library and the librarian (A), the indispensable periodicals for all the fields consulted; (B), a short list of essential periodicals in general medicine which cover a large amount of material. This latter list is designed primarily for the individual and for the small library.

The first, or " A " List, was derived by listing in alphabetical order the first six periodicals in the Tables for the various fields. These were chosen because in most cases they include general and clinical periodicals as well as those specializing in the fields in question. They contain an average of 46 per cent. of all the useful material in the various fields. The numbers at the right of the titles indicate the rank of the periodical in each field. For example, the *American Journal of Diseases of Children* ranks 19th in usefulness to those interested in gynecology and obstetrics, and first to those interested in children's diseases and in children's growth and development.

The second, or " B " List, containing the minimum number of essential periodicals in the field of general medicine, was obtained by ranking periodicals of the " A " List according to the frequency of occurrence in certain fields. The fields used were those of anesthesia and analgesia, surgery, bacteriology, cancer, roentgenology, cardiology, hematology, dermatology and syphilology, otolaryngology, endocrinology, gynecology and obstetrics, nervous and mental disease, gastro-enterology, diseases of childhood, public health and hygiene, and urology. The other headings in Tables 1–27 were omitted in order not to overweight certain fields. This list should at least help to solve the problem of " what to buy " for a small library.

(*Text continued on p. 188*)

"A" LIST

TABLES 28 AND 29

	Anesth. & Analg.	Surgery	Bacteriology	Infect. Diseases	Parasitology	Cancer	Radiology	Roentgenology	Cardiology	Hematology	Dermat. & Syphil.	Allergy	Otolaryngology	Endocrinology	Diabetes	Thyroid	Sex	Gynec. & Obstet.	Nerv. & Ment. Dis.	Nutrition	Vitamins	Gastro-Enterol.	Dis. of Children	Growth & Develop.	Pub. Hlth. & Hyg.	Indust. Med.	Urology
Acta radiol.							6	16																			
Am. Heart J.									1																		
Am. J. Anat.																	5	19						6			
Am. J. Cancer						1	8	12														2					
Am. J. Dig. Dis. & Nutr.																											
Am. J. Dis. Child.							8	9				10			16			19		10	9		1	1	16		
Am. J. Hyg.			22		2																				1	14	
Am. J. M. Sc.		10				13	11	11	4	4	11	5	9	16	5	6			12			8	8				
Am. J. Obst. & Gynec.	10					11												1					12				
Am. J. Phys. Anthropol.																								4			
Am. J. Physiol.	3	14							10	7		11		1	7	4	1	6	8	2	4	4		2		13	
Am. J. Psychiat.																			5								
Am. J. Pub. Health			18																						3		
Am. J. Roentgenol.		17					1	1										18				10					
Am. J. Surg.	5	6					11															3					8
Am. J. Trop. Med.				20	6																				10		
Anat. Rec.																	4	20						9			
Ann. de Derm. et Syph.											5																
Ann. Inst. Past.			5	12																					14		
Ann. Otol., Rhin., Laryn.													2														
Ann. Surg.	15	2				8	10	4				11				12						7					4
Ann. Trop. Med.					4																						
Arch. Derm. & Syph.											1	7															
Arch. f. Derm. u. Syph.											2																
Arch. f. exp. Path. u. Pharm.									13	18				6	16	5											
Arch. f. Gynäk.						17								15			7	4									
Arch. f. Hyg.																										4	
Arch. Int. Med.	14					19	9	13	3	2	7	6	14	12	2	4		20	11	11		5	4	11			
Arch. f. klin. Chir.		4						15								11											13
Arch. Neur. & Psychiat.		14									11								1								
Arch. Otolaryngol.													1														
Arch. Surg.	7	1				6	7	7					14									12					14
Biochem. J.						13									18	6				4	2						
Biochem. Ztschr.						17						12		11		2				8	9					5	
Brit. J. Dermat.											4																
Brit. M. J.	10	5	19			12	11		14	13		14	17	12	3			9			7	8	13			11	7
Bull. soc. franç. Der. & Syph.											6																
C. R. Acad. des Sc.			17													4					14				17		
C. R. Soc. de Biol.			15	5	10	7				17			8		2		2			6					8	13	
Curr. Res. in Anesth. & Analg.		1																									

Bull. soc. franç. Der. & Syph.												6																					
C. R. Acad. des Sc.							17												4						14					17			
C. R. Soc. de Biol.			15	5	10	7				17		8		2			2			6						8	13						
Curr. Res. in Anesth. & Analg.	1																																
Dermat. Wchnschr.											6																						
Deut. Ztschr. f. Nervenh.																				6													
Deut. Arch. f. klin. Med.									5																								
Endocrinol.													3	10	11	8	13									8							
Fort. a. d. G. d. Röntgen.						4																											
J. A. M. A.	2	3	2	6	8	5	2	2	2	1	3	2	4	9	1	3	12	3	3	13	4	1	2	3	2	2	2						
J. Allergy												1	6																				
J. Am. Vet. M. A.				11	6																												
J. Bact.			6	3																						7							
J. Biol. Chem.	15			16		8			13	18		12		7	4	1		16		1	1		3	7	17	9	14					
J. Bone & Joint Surg.		8					14	6																									
J. Clin. Investig.									5				20	8						14			7										
J. Exp. Med.			1	2	14	9			9	3		10				9							5	5	4							
J. Exp. Zoöl.																6																	
J. Immunol.			9	10								4											13	12	14								
J. Indust. Hyg.																											1						
J. Infect. Dis.			3	1							14														3								
J. Lab. & Clin. Med.	11			16								3											14		17								
J. Laryngol. & Otol.													5																				
J. Nerv. & Ment. Diseases																			4														
J. Nutrition																				3	8												
J. Parasitology					1																												
J. Pharmacol. & Exp. Therap.	6													14		13											10						
J. Urology		14						8																									1
Klin. Wchnschr.	16		16	15		19			9	11	4	12		5	6	10	9	12	11	17	19	12		14		14	14						
Lancet		7	14			9	13	14	12	10	8	10	10	18	15	13		8	14		5	6	6	14	11	3	5						
Laryngoscope													3																				
Münch. med. Wchnschr.	12	12	21					14	7	11	6					11		17	11			15				8	17						
New England J. Med.		13						12	6	9				3			18	14	17		13	11	18			9							
Parasitology					3																			16									
Proc. Soc. Exp. Biol. & Med.		16	10	6		15			8					4	11	7	3	10		5	3		15	10	5								
Pub. Health Bull.			11																						17	4							
Pub. Health Repts.				18																	6			17	6	5							
Radiology							3	3														14											
Science			22	15	5															10	13			15	14								
Surg., Gynec. & Obstet.	8	2				3	5	5				10				9		5	15			11					3						
Virchows Arch. f. path. Anat.		11				2	11			15	13		14						15								17						
Zentralbl. f. Bakt.			4	4																					13								
Zentralbl. f. Chir.	14	5																															
Zentralbl. f. d. g. Neur. u. P.																			2				15										
Zentralbl. f. Gewerbehyg.																											6						
Zentralbl. f. Gynäk.	4					16							19			11	2																
Ztschr. f. Hals-, Nasen-, u. O.													3																				
Ztschr. f. klin. Med.									7	6				15																			
Ztschr. f. Krebsforschung						4																				14							
Ztschr. f. Urol. Chir.																											6						

"B" LIST

Rank	Journal
1.	J. A. M. A.
2.	Lancet
3.	Arch. Int. Med.
3.	Brit. M. J.
4.	Am. J. M. Sc.
4.	Klin. Wchnschr.
4.	München. med. Wchnschr.
5.	J. Biol. Chem.
5.	New England J. Med.
5.	Surg., Gynec. & Obst.
6.	Am. J. Physiol.
6.	Proc. Soc. Exper. Biol. & Med.
7.	Ann. Surg.
7.	Arch. Surg.
7.	Virchows Arch. f. path. Anat.
8.	J. Exper. Med.
9.	Arch. f. Gynäk.
9.	C. R. Soc. de Biol.
10.	Am. J. Dis. Child.
10.	Am. J. Roentgenol.
10.	Am. J. Surg.
10.	Zentralbl. f. Gynäk.
11.	Arch. f. klin. Chir.
11.	Arch. Neurol. u. Psychiat.
11.	J. Clin. Investigation
11.	J. Immunol.
11.	J. Infect. Dis.
11.	J. Urol.

SUMMARY

A total of some 26,760 references were tabulated, and on the basis of the tabulations 230 periodicals were ranked according to their usefulness in relation to 27 different medical subjects. These 27 lists comprise an average of 75 per cent. of the material in these fields; and, it is believed, furnish a dependable guide to all the important periodicals in those subjects.

Those ranking among the first six titles of these lists on various medical subjects have been arranged alphabetically in Tables 28–29 to form the "A" List. A shorter list ("B"), of the most essential periodicals for general medicine, has also been compiled. This list, the "A" List, and the lists for the special fields should furnish a sound basis for the selection of periodicals for medical libraries.

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REPORTS OF MEETINGS

THE CENTENNIAL OF THE ARMY MEDICAL LIBRARY

LESTER A. SMITH, M.A. IN L.S.

Army Medical Library

PHYSICIANS and librarians of the civilized world joined November 16 in the formal ceremonies celebrating the first century of the Army Medical Library, better known to an earlier generation as the Library of the Surgeon General's Office. The history of these hundred years has been described elsewhere;[1] the full account of the evening's ceremonies will appear in the January, 1937, issue of *Medical Life,* while the commemorative oration of Sir Humphry Rolleston will be published in a number of medical periodicals.[2] I should like here to describe the event for my fellow members of the Medical Library Association and to record my personal impressions.

Plans for the occasion were in progress as early as August of this year. The Library is usually thought of as dating from the directorship of John Shaw Billings, commencing shortly after the Civil War, but its story begins in 1836 while President Andrew Jackson was completing the last year of his second term. In that year, Surgeon General Lovell, ending the last year of his service, ordered the purchase of medical books for his office library. Did the General conceive of a great library, or was he interested only in having "a shelf of books in the Surgeon General's Office"? Who can say? Today his portrait surveys the readers of the Library with an expression defying analysis.

The evening of November 16 was chosen for the meeting and there followed a busy period of preparation ended only by the rap of the gavel that evening in Library Hall. Those who have seen that large room only when it was crowded with tables, desks, and readers, would scarcely have recognized it that night, filled with flags, flowers, and the fury of conversation accompanying a gathering of library people.

Following the introductory remarks by Colonel Harold W. Jones, librarian and presiding officer, Surgeon General Charles R. Reynolds, U. S. Army, made the welcoming address, express-

[1] See chapter V of Garrison's "John Shaw Billings, a memoir," 1915, pp. 213–277. For recent history see article by Major Edgar E. Hume in the *Military Surgeon,* **78**: 241–67, 1936.

[2] See abridged version in *Brit. Med. J.,* 1936, 1094 (Nov. 28).

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ing the pride of the Medical Corps in the development of the Library. Then followed the principal oration, delivered by Sir Humphry Davy Rolleston, Bart., Emeritus Regius professor of physic, Cambridge.

The commemorative address deserves reading in its entirety and I content myself with quoting one paragraph here. It was interesting to hear from Sir Humphry that "Libraries and museums are important instruments in medical education and progress. They resemble each other as reservoirs of sound learning gathered from practical experience. This correlation of knowledge, shown by the oldest scientific museum in Great Britain—the Ashmolean Museum (1679) at Oxford, which was under the same roof as the library of natural history and philosophy—and also by the original British Museum (1754) in Bloomsbury . . . was confirmed as regards medicine, by the Army Medical Museum which contains the Army Medical Library."

To show the esteem of the Library, General Reynolds presented to Sir Humphry a parchment scroll, appointing him the first life consultant of the Library. The selection of such an eminent leader of British medicine as orator and consultant is a particularly happy one, for throughout its history the Library has owed much to English physicians. Billings found an inspired assistant in Dr. Robert Fletcher of Bristol, England, "his coadjutor throughout the first series of the *Index-Catalogue*" and editor of the major portion of the second series. To another English medical man, Thomas Windsor (1831–1910) of Birmingham, the Library is indebted for the most extensive gifts ever received from a single individual.

Invitations to be represented either by delegate or by message had gone out to the most eminent medical leaders and librarians and to the foremost scientific institutions of the world. A selection of the greetings was read by Colonel Jones. All of them, engraved, printed, typed, or in longhand, when mounted and displayed on the bulletin board, formed a most interesting exhibit. Colonel Jones, who took great interest in these gracious messages, is preparing a summary which will be printed, and for that reason I will give here only the message received from the President of the United States:

The White House,
November 10, 1936

My dear General Reynolds:

I regret that I shall be unable to be present on the evening of November sixteenth at exercises in commemoration of the one hundredth anniversary of the founding of the Army Medical Library.

The years that span the period from the founding of the Library to the present have witnessed profound development in the practice of the art of healing. And during that century the Army Medical Library has attained a position of first rank among the scientific libraries of the world, and has become, I am glad to know, a veritable storehouse of medical learning. Its treasures, I am informed, are available to and are consulted by seekers after truth not only from our own country but from other and far away lands.

I send my hearty felicitations and warm personal greetings to all who gather for the centennial celebration. I trust that as the years pass the Library will grow in the accumulation of its treasures and that its rich resources always will be available to all who work for the betterment of mankind through the prevention of disease and the alleviation of human suffering.

Very sincerely yours,
(Signed) FRANKLIN D. ROOSEVELT

The graciousness of those words found an echo in the sentiments of those present for the evening. The Medical Library Association was represented by its President, acting also as the delegate of the Osler Library. Dr. Francis spoke in the same hall the following evening on Sir William Osler and his library before a meeting of the District of Columbia Library Association. Other distinguished guests included Lieut. Gen. Friedrich von Boetticher, military attaché of the German Embassy, Col. W. W. Torr, military attaché of the British Embassy, the Cuban Ambassador and Señor Manuel Mencia, Cuban Secretary of Public Health, Admiral Percival Rossiter, Surgeon General of the Navy, and two former Surgeon Generals of the U. S. Army, Major Generals Ireland and Patterson. The meeting had its special significance for Miss Margaret Billings, the daughter of Colonel Billings, and for Mrs. F. H. Garrison, whose husband continued the tradition of Billings and Fletcher. Three former librarians were present: Colonel James Matthew Phalen of Illinois, Colonel Percy Moreau Ashburn of Ohio, and Major Edgar E. Hume of Kentucky.

At the close of the program there was opportunity for inspection of the library routine and the special exhibits. Among the latter may be mentioned one on illustrations in anatomical works, arranged by Dr. C. F. Mayer, Assistant Librarian.

Thus the Library ended its first centennial and turned to face the second century. Such an occasion, if it is to have any value, ought to afford both a survey of the past and a vision of the future. The past years were largely the story of three men, Billings, Fletcher, and Garrison. The Library flourished in

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their presence and was not without its reverses when they left. The great events were the opening of the Museum and Library building in 1887, the very remarkable increase of the collection following the Civil War, and the completion of three series of the *Index-Catalogue*.

In November 2036, what events and what men will the celebrants of that year recall? With the example of the *Literary Digest* fresh in memory, it is better to avoid prophecy, and in any event a straw vote will be of little value here. But if one may not with safety predict, it is at least permitted to hope that the historian may list the following as accomplished early in the second century:

a. Increased co-operation with the medical profession and with other libraries. The Library is now a member of our Association and its Exchange. It is a matter of regret that it was not able to work with Miss Lawrence and the earlier managers from the very start.

b. Correlation of the Index-Catalogue and the Quarterly Cumulative Index Medicus. For over forty years the *Index-Catalogue* and the *Index Medicus* had the same editorship. Is there any reason worthy of the slightest respect why they should not at least use the same periodicals and issue from the same office? Surely the problem of indexing medical literature is difficult enough without artificial complications.

c. A new building adequate for both Museum and Library.

d. A larger proportion of current medical publications in the collections. If the Library is unable to obtain everything published on medicine, cannot co-operative agreements on purchases of books and periodicals be arranged with other libraries, so that a desired copy can be located in at least one library?

e. An active program of research. The Index-Catalogue will of course continue to be the chief object of effort, but in a collection of this type there is material worthy of investigation. If the Library is really to be the National Medical Library, there is a responsibility here which ought to be met.

ABSTRACTS OF CURRENT ARTICLES

JUDITH WALLEN HUNT

Bio-medical Libraries, University of Chicago

How Can the Library Profession Aid in Attracting Desirable Young People to Librarianship? A Symposium. Part I by George F. Bowerman; Part II by Amy Winslow; Part III by Ethel F. McCullough. *Library Journal*, 61: 765–767, 831 (Oct. 15 and Nov. 1, 1936).

The title suggests that recruits to the profession are not always of the desirable variety. To the question, "What is wrong with the status quo of librarianship?", we have the following answers: (1) Low salaries; (2) Lack of opportunity for advancement; (3) Profession is too much feminized; (4) Attracts too many passive introverts. To the question, "What is the remedy?", we have the following suggestions: (1) Higher standards for admission into the profession; (2) Higher salaries; (3) Definite programs of promotion; (4) Clear distinction to be made between the professional and clerical staffs.

See also: (1) "Certification for college and university librarians," by Charles H. Stone. *A. L. A. Bull.*, 30: 879–882 (Sept., 1936); (2) "Salaries of librarians and other professional workers," by William P. Tucker. *Wilson Bull.*, 11: 179–182 (Nov., 1936); (3) "The special library profession and what it offers. 13. Medical and public health libraries," by Adeline Macrum. *Special Libraries*, 27: 12–18 (Jan., 1936).

Memorable Days in Medicine. A Calendar: April–Oct. By Paul F. Clark and Alice Schiedt Clark. *Medical Life*, 43: 124–143 (April, 1936); 224–266 (June, 1936); 368–409 (Sept., 1936).

A series of chronologies which cover outstanding bio-medical anniversaries and events day by day of the months listed, from traditional times to the present.

Reference Sources in Medicine. By Mae L. Walker. *Special Libraries*, 27: 138–142 (May–June, 1936).

A short description of the scope, use, and limitations of a selected list of bibliographical tools in the field of bio-medicine.

To Assure $50 a Month at 65. *A. L. A. Bull.*, 30: 947 (Oct., 1936).

Lump sums required by the A. L. A. Retirement Plan to assure this income are shown graphically; viz., at age thirty, $1500 will buy this security; at forty, $2400; at fifty, $3900, etc.

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A Central Clearing House. By D. B. Gilchrist. *Library Journal,* 61: 860 (Nov. 15, 1936).

A description of the plan and mode of usage of the Union Catalogue at the Library of Congress.

Hospital Libraries. By C. E. A. Bedwell. *Contemporary Review,* 150: 224–228 (Aug., 1936).

The article concerns hospital libraries for patients, and begins with a historical sketch of their development in Great Britain.

See also: (1) "Association Internationale des Bibliothécaires d'Hôpitaux. Ier Congrès International, 8–11 Mai, 1936." *Libr. Ass'n Rec.,* 38: 252 (June, 1936); (2) "Library service in the modern hospital," by Harry D. Clough. *Libr. J.,* 61: 758–761 (Oct. 15, 1936); (3) "Work in a hospital school of nursing library," by Ethel Wigmore. *Spec. Libr.,* 27: 81–82 (March, 1936).

A. M. A. Reports of Officers. The Library. *J. A. M. A.,* 106: 1170 (April 4, 1936).

The usefulness of this library to the medical profession may be summarized as follows: 9,854 journals loaned; 3,113 package libraries loaned; 4,500 bibliographical questions answered; 1,000 visitors served. The cost of publication of the *Quarterly Cumulative Index* exceeded income by $44,439.84; 618 copies went to foreign countries.

Medical Libraries, the Medical Profession and Social Hygiene Literature. By Charles Frankenberger. *Journal of Social Hygiene,* 22: 262–264 (June, 1936).

The author suggests that the American Social Hygiene Association cooperate with the medical profession and the medical library to establish in the larger libraries collections on social hygiene which will make possible for the public intelligent, directed reading in the literature of sex.

See also: "Social hygiene in the university library," by Nathan van Patten. *J. Soc. Hygiene,* 22: 255–257 (June, 1936).

TECHNICAL MATTERS

SUE BIETHAN

Medical Librarian, University of Michigan

How much has been written on so-called library science! Various systems of classification and cataloguing, lists of subject headings, rules for filing and methods of binding are to be had for the asking. We are concerned with these only as they may be applied to medical libraries, or may be modified to meet our needs and to increase the efficiency of our work.

Each library in the Association has individual problems. But each one also has problems that are common to us all and which may sometimes be solved by an interchange of ideas. Old and wonted ways of work may be improved by comparison of methods.

Needless to say, the success of this department depends upon the co-operation of the members of the Association. We shall be glad to receive practical suggestions and notes on library procedure.

S. B.

AN ECONOMICAL METHOD OF BINDING PERIODICALS FOR USE IN SMALL HOSPITAL LIBRARIES

Since funds for the maintenance of the hospital library are limited, the Library Committee of the Youngstown Hospital has devised a cheap and serviceable method of binding volumes of medical periodicals for use in its library.

Equipment: a 12-inch paper-cutter, an electric hand-drill, a book-sewing clamp, an electric stylus, scissors, paste-brush, upholstery needle, and a flat-top table.

Materials: waxed linen upholstery thread, book-cloth, paste, transfer-paper, flexible fiber-board.

The workshop is an unused space in the hospital into which a flat-top table is set. The sewing-clamp is screwed to the table so that the screws fit into the side of the top, with the clamp projecting over the top of the table. The rest of the room may be arranged to suit the convenience of the operator.

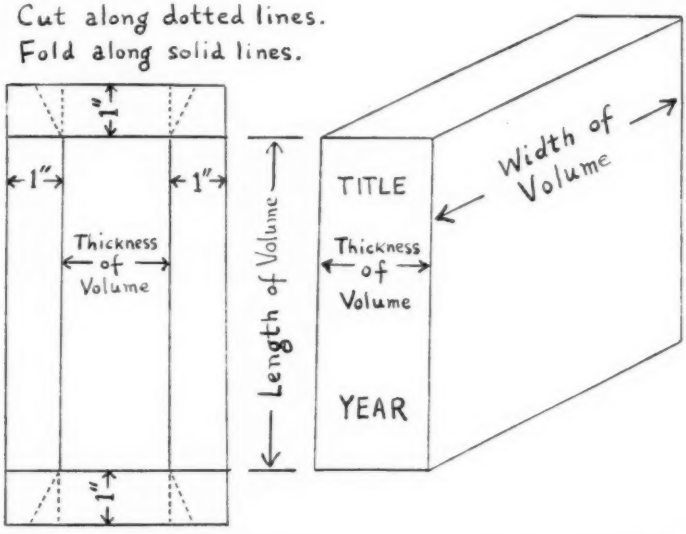
COLLATING AND SEWING: The numbers of the periodical which constitute a volume are collected. Each number is torn apart, the operator carefully separating the sections and removing stitches and glue to facilitate even page-alignment. The covers and advertising material are discarded. Pages are arranged in proper sequence with title-page and contents at the beginning, the index at the end of the volume.

Two pieces of flexible fiber-board are cut to fit the pages. One piece of board is placed on the bottom, one on top of the pile. The back and sides of the volume are evened by pounding on a flat surface. The volume is placed in the sewing-clamp, the back edge lined up with the edge of the clamp, and the clamp tightened. At this point, the volume should be examined to make sure that no pages have slipped.

Holes are drilled through the volume along the line of holes in the clamp. The drill should be held at a right angle to the volume. The clamp is now loosened, and the volume slipped through for a distance of about one inch, in such a way that the

holes will be left free for sewing, and the clamp is tightened again.

A needle is threaded with a double thread knotted at about three inches from one end, and of sufficient length to sew the whole volume. The sewing is done by inserting the needle down through the first hole to the operator's left, and then up through the second hole. The needle is slipped through the double strand of thread and the thread pulled tight, so that the knot is forced into the second hole. The operator sews through the holes to the right, and then back to the left as far as the second hole, where the thread is tied to the loose end and the excess cut off.



LABELLING AND COVERING VOLUME: A piece of book-cloth is cut off, measuring two inches longer than the length of the volume, and two inches wider than its thickness. The piece is now cut and folded as shown in the figure. An electric stylus and transfer-paper are used for lettering. The title of the periodical is placed at the upper end of the outer surface of the backing, the volume number and year at the lower end. Care should be taken to center the lettering. Block letters insure evenness and uniformity, but any style may be used, depending upon the skill of the operator.

After the lettering, the inner side of the backing is covered

with paste; the projecting piece in the center is turned under at each end. The book-cloth is pasted on the back of the volume and the overlapping inch on each side is pasted to the outer sides of the fiber-boards. The projecting tabs at each corner are folded under. Paste is allowed to dry.

This technique was developed by Dr. Samuel Klatman of our staff. Further details may be obtained by addressing him in care of the Youngstown Hospital, South Unit.

H. E. PATRICK, M.D., *Librarian,*
Youngstown Hospital.

This method of binding is suitable for use in the library of limited space, one in which only the last few years of a periodical are kept on file. It must be remembered that holes weaken the pages, that the thread will eventually cut through the back, making it impossible to rebind the volume for permanent use.

S. B.

PHOTOSTATIC DUPLICATION OF MUCH-USED ARTICLES

To obviate wear and tear on certain bound periodicals containing references that are used constantly, we are photostating the articles we do not have in duplicate or in reprint form. The photostat pages are put into pamphlet binders. This is less expensive than rebinding or replacing the periodical.

BLAKE BEEM, *Librarian,*
University of Louisville

EXHIBITION LISTS AND SUGGESTIONS

STUDIES ON DISEASES OF THE SOUTH, ESPECIALLY IN LOUISIANA [1]

Heustis, J. W. Physical observations and medical tracts and researches on the topography and diseases of Louisiana. New York, 1817.

Barton, E. H. Application of physiological medicine to the diseases of Louisiana. Phila., 1832. (Dr. Barton was Dean of the Medical College of Louisiana, 1836–40.)

——. Introductory lecture on the climate and salubrity of New Orleans and its suitability for a medical school. 1835.

——. Vital dynamics of New Orleans, in a report to the A. M. A., May, 1849. Phila., 1849.

[1] An outline, prepared by Miss Mary Louise Marshall, of an exhibition arranged by the Tulane University School of Medicine Library for the Annual Convention of the American Public Health Association, held in New Orleans this fall. The *Bulletin* will welcome similar lists worthy of record and potentially useful to other medical libraries.

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Monette, J. W. Essay on the summer and autumnal remittent fevers of Mississippi. *Western J. M. & S.*, 1: 87–130 (1840).

Drake, Daniel. Systematic treatise, historical, etiological and practical on the principal diseases of the interior valley of North America. . . . Cincinnati, 1850—Phila., 1854. (Refer to Garrison,[2] pp. 441 ff.) (Portrait shown.)

McGown, Thompson. Practical treatise on the most common diseases of the south. Phila., 1849.

Barton, E. H. Report to the Louisiana state medical society on the meteorology, vital statistics and hygiene of the state of Louisiana. New Orleans, 1851.

Chaillé, S. E. Life and death in New Orleans from 1787–1869. New Orleans, 1870.

Hoffman, F. L. Medical topography and general health conditions in Louisiana, 1770–1877. Manuscript, 1913. 2 v.

——. Vital statistics of New Orleans, 1787–1909. Manuscript, 1913.

YELLOW FEVER—CONTRIBUTIONS TO ITS ETIOLOGY, AND TO ITS HISTORY IN NEW ORLEANS

Gérardin, N. V. A. Mémoires sur la fièvre jaune considérée dans sa nature et dans ses rapports avec les gouvernemens. Paris, 1820. (Dr. Gérardin had formerly been connected with the *Bureau de Santé de la Nouvelle Orléans,* and " ex-secrétaire général de la Société médicale de la même ville.")

Monette, J. W. Epidemic yellow fever of Natchez: an essay read before the Jefferson College and Washington Lyceum, Dec. 2, 1837. Natchez, 1838. (Portrait shown.) (Dr. Monette was the first to suggest quarantine at the mouth of the Mississippi as a measure in the control of communicable diseases.)

——. Observations on the epidemic yellow fever of Natchez and the southwest. Louisville, 1842.

New Orleans—Sanitary Commission. Report on the epidemic yellow fever of 1853. 1854. (This is an exhaustive report published by a commission appointed by the city to investigate the cause of yellow fever after and during the disastrous epidemic of 1853. It contains a large map of the city, showing topographical features that seemed to have some bearing on the transmission of yellow fever.)

National Board of Health. Annual Report. 1879. Pp.

[2] References to Garrison will invariably be to the fourth edition, 1929.

33–73. (Contains the report of the Havana yellow fever commission. This commission was appointed on behalf of the United States to make a sanitary survey of the Cuban stronghold of yellow fever, situated only a few miles from our own shores, which was a perpetual menace to all the cities of the Atlantic seaboard and of the Gulf of Mexico. Dr. Rudolph Matas served as an attaché of the commission, which paved the way for the work of Reed and Carroll in 1900.) (Copied in part from Garrison.)

Jones, Joseph. Medical and surgical memoirs, v. 2. New Orleans, 1880. (Includes colored plates with suggested etiological information,—microscopic appearance of black vomit, microscopic objects in air during epidemic, microscopic objects in yellow fever blood and urine, postmortem appearance of heart section; also plates of facial expression and color in first and last stages of the disease.)

Nott, J. C. Yellow fever contrasted with bilious fever; reasons for believing it a disease *sui generis;* its mode of propagation; remote cause; probably insect or animalcular origin. *New Orleans M. & S. J.,* **4**: 563–601 (1848). (Portrait shown.) (Dr. Nott [1804–73] was one of the first to suggest the "mosquito theory" in reference to the transmission of yellow fever.)

Finlay, Carlos. El mosquito hipoteticamente considerado come agente de trasmisión de la fiebre amarilla. *An. r. Acad. de cien. med . . . de la Habana,* **18**: 147–69 (1881–82). (Portrait shown.)

——. Same. (In translation by Dr. Rudolph Matas.) *New Orleans M. & S. J.,* **9**: 601–16 (1882). (The hypothesis of the transmission of yellow fever was definitely stated by Carlos Finlay of Cuba in 1881, 19 years before the work of the Reed Commission.)

Faget, J. C. Type and specificity of yellow fever established with the aid of the watch and thermometer. Paris, 1875. (Dr. Faget, of New Orleans, was the first to note the fall of pulse-rate correlating with the rise of temperature in yellow fever,—"Faget's sign.")

Reed, Walter, Carroll, James, Agramonte, A. and Lazear, J. W. Etiology of yellow fever. *Phila. M. J.,* **6**: 790–96 (1900). (Portraits shown.) (Refer to Garrison, pp. 718, ff.)

Reed, Walter, Carroll, James, Agramonte, A. Experimental yellow fever. *Tr. Assn. A. Phys.,* **16**: 45–72 (1901).

Gorgas, M. D. William Crawford Gorgas, his life and work. Phila., 1924. (Dr. Gorgas applied in practical sani-

tation the discovery of Reed and his co-workers, and in three months freed Havana from the disease for the first time in 150 years.)

League of Nations—Pan African Health Conference. Yellow fever, *Qu. Bull. Health Org. of the League of Nations,* 5: 8–88 (1936). (The latest résumé of scientific research and study of yellow fever.)

HISTORICAL ACCOUNTS OF YELLOW FEVER, WRITTEN BY NEW ORLEANS PHYSICIANS

Deléry, Charles. Précis historique de la fièvre jaune. New Orleans, 1859.

Carpenter, W. M. Sketches from the history of yellow fever, showing its origin, together with facts and circumstances disproving its domestic origin and demonstrating its transmissibility. New Orleans, 1844. (Dr. Carpenter was professor of Materia Medica and Therapeutics at the Medical College of Louisiana, which later became Tulane University School of Medicine.)

Graph showing mortality from yellow fever in New Orleans, 1817–80. (Shows peak mortality rates of epidemic years.)

Augustin, George. History of yellow fever. New Orleans, 1909. (Mr. Augustin was a former librarian of the Orleans Parish Medical Society.)

DESCRIPTIONS OF EARLY EPIDEMICS

Gros, A. A. and Gérardin, N. V. A. Rapport fait à la Société médicale (Nouvelle Orléans) sur la fièvre jaune qui a régné d'une manière épidémique pendant l'été de 1817. New Orleans, 1818.

Thomas, P. F. Essai sur la fièvre jaune d'Amérique, ou considérations sur les causes, les symptômes, la nature et le traitement de cette maladie, avec l'histoire de l'épidémie de la Nouvelle Orléans en 1822. . . . New Orleans, 1823.

Halphen, Michel. Mémoire sur la choléra-morbus, compliqué d'une épidémie de fièvre jaune, qui a régné simultanément à la Nouvelle Orléans en 1832. Paris, 1833.

Barton, E. H. Account of the epidemic of yellow fever which prevailed in New Orleans during the autumn of 1833. Phila., 1834.

Dowler, Bennet. Tableau of the yellow fever of 1853, with topographical, chronological, and historical sketches of the epidemics of New Orleans since their origin in 1796, illustrative of the quarantine question. New Orleans, 1854.

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Deléry, Charles. Mémoire sur l'épidémie fièvre qui a régné à la Nouvelle Orléans et dans les campagnes pendant l'année 1867. New Orleans, 1867.

MALARIA—EARLY CONTRIBUTIONS TO THE STUDY OF ITS ETIOLOGY AND EPIDEMIOLOGY

Mitchell, J. K. On the cryptogamous origin of malarious and epidemic fevers. [In his "Five essays." Phila., 1859.] (Refer to Garrison, p. 439.)

King, A. F. A. Insects and disease—mosquitoes and malaria. *Pop. Sci. Mo.*, 23: 644–58 (1883). (Refer to Garrison, p. 583.)

Laveran, C. L. A. Du paludisme et de son hématozoaire. Paris, 1891. (Portrait shown.) (Refer to Garrison, p. 707.)

Grassi, B. and Feletti, R. Malariaparasiten in den Vögeln. *Centralbl. f. Bakt.*, 9: 403–09 (1891). (Portrait shown.) (Refer to Garrison, p. 744.)

Ross, Ronald. Observations on a condition necessary to the transformation of the malaria crescent. *Br. Med. J.*, 1: 251–55 (1897). (Portrait shown.) (Refer to Garrison, pp. 707–08.)

MacCallum, W. G. On the flagellated form of the malarial parasite. *Lancet*, 2: 1240–41 (1897).

Craig, C. F. Malarial fevers, haemoglobinuric fever and blood protozoa of man. New York, 1909. (Refer to Garrison, pp. 719–20.)

Opie, E. L. On the haemocytozoa of birds. *J. Exp. M.*, 3: 79–101 (1898). (Refer to Garrison, p. 632.)

Bass, C. C. New conception of immunity; its application to the cultivation of protozoa and bacteria from the blood and to therapeutic measures. *J. A. M. A.*, 57: 1534–35 (1911). (Portrait shown.)

——. Cultivation of malarial plasmodia in vitro. *Am. J. Trop. Dis.*, 1: 546–64 (1914). (Refer to Garrison, p. 706.)

Jones, Joseph. Malarial fever. [In his "Medical and surgical memoirs," v. 2. 1880.] (Portrait shown.)

Graph of Malaria Mortality in New Orleans, 1845–1930.

LEPROSY—ITS ETIOLOGY AND HISTORY IN LOUISIANA

Hansen, G. A. Indberetning . . om . . en . . reise for at anstille undersøgelser angaende spedalskhedens aersager. Christiana, 1874. (Established the causal relations of the bacteria of leprosy.)

Clegg, M. T. Cultivation of the leprosy bacillus. *Phil. J. Sci.*, Sect. B, 4: 403–15 (1909).

Unna, P. G. Histotechnik der leproesen Haut. Hamburg, 1910. (Described the pathology of leprosy.)

Dimitry, T. J. Introduction of leprosy into Louisiana. [To be published in the *New Orleans M. & S. J.*]

Photostat of a letter dated April 15, 1756, from D'Auberville in New Orleans to the minister. He sends a list of the soldiers returning to France on the *Messenger* because of incurable diseases; he asks that no more men be sent over in this condition. [From Surrey's "Calendar of manuscripts in Paris archives and libraries relating to the history of the Mississippi Valley to 1803," v. 2. 1923.] (Additional corroborative evidence of the introduction of leprosy into Louisiana.)

Photostatic copy of a map showing "Leper Land," situated on high ground between the Mississippi River and the Bayou St. John, near New Orleans, in 1785. This is the first provision for the segregation of lepers in the U. S. The original map is in the Louisiana State Archives, New Orleans.

Photostatic copy of a map showing the Lazaretto (hospital for lepers) on Chartres St., New Orleans, in 1798. This is the first hospital for lepers in the U. S. The original plan is in the Louisiana State Archives, New Orleans.

Jones, Joseph. Leprosy in America. [In his "Medical and surgical memoirs," v. 2, pp. 1179–1332. 1880.] (Dr. Jones made this study while president of the Louisiana State Board of Health. Plates of cases studied in Louisiana are included.)

Blanc, H. W. Leprosy in New Orleans. *New Orleans M. & S. J.*, 16: 165–85; 247–75; 327–44 (1888). (Dr. Blanc was the first professor of Dermatology in Tulane University School of Medicine.)

La. State Board of Control. Reports of the Leper Home (Carville, La.), established in 1894. 1896–1918.

U. S.—Senate. Care and treatment of persons afflicted with leprosy; a bill to provide for the care and treatment of persons afflicted with leprosy in the U. S. Washington, 1916. (This document gives complete testimony of Dr. Isadore Dyer before the Senate Committee. Dr. Dyer, at that time Dean of Tulane University School of Medicine, was one of the leading authorities on leprosy in the U. S.)

Dyer, Isadore. Reprints of some 15 papers on various phases of the leprosy problem, shown with portrait of Dr. Dyer.

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U. S.—Public Health Service. Federal home for lepers. [In U. S. Public Health Service. Annual Report. 1920.]

Denney, O. E. National leper home (U. S. Marine Hospital), Carville, La. [In U. S. Public Health Service Reports, 44: 3169–76 (1929).] (A recent account of the National leper home. It is interesting to note that of the 303 patients in the hospital at this time, one third are natives of Louisiana. This is not only because of the greater prevalence of the disease in this locality, but also perhaps because leprosy has been studied so long here that it is the more readily recognized.)

BIBLIOGRAPHICAL NOTES AND INQUIRIES

Miss Marie Tremaine, of the staff of the Toronto Reference Library, writes that she is preparing, on a Carnegie grant under Yale University, a record of eighteenth century Canadian printing. The *Bulletin* is happy to comply with her request that it print the following statement from her:

"I am preparing a bibliography of Canadian imprints, 1751–1800, and seek information on the following pamphlets: (1) *Direction pour la guerison du Mal de la Baie St. Paul* [by Dr. Badelard]. 16 pp. 8vo. Quebec, 1785; (2) *Remarks on the distemper generally known by the name of the Molbay disease,* by Robert Jones. 19 pp. 8vo. Montreal, 1786; (3) *Remarques sur la maladie contagieuse de la Baie Saint-Paul,* by Robert Jones (a translation of the preceding item). 22 [2] pp. 8vo. Montreal, 1787. Printers' account books show that there was also published for Lieut.-Gov. Hope and for Bishop Esglis in Quebec, 1785–86, a number of circulars on Mal de la Baie Saint Paul, which was apparently a form of syphilis. I should be very grateful for assistance in locating copies of these works and for information on their authors."

We assume that Miss Tremaine is well acquainted with the accounts of Doctors Badelard and Jones in the works of Heagerty and the Aherns, and hope that some of our members may be able to inform her of the location of copies of the exceedingly rare early imprints. The *Bulletin* will be glad to print such information, if it becomes available.

The *New York State Journal of Medicine* in its Nov. 1st issue started publication of a history of medicine in the State of New York, with reference particularly to the medical history

of Monroe County, written by Mrs. Florence A. Cooksley, Librarian of the Rochester Academy of Medicine.

Mrs. Eileen R. Cunningham, Librarian of the Vanderbilt University School of Medicine, informs us that a second edition of her "Classification for medical literature" is expected to appear early in 1937. "This edition," she writes, ". . . will be published in book form and not in kardex as the first edition was. There will be no radical changes in the general scheme of the Classification. The changes will include expansion and additions in various subjects throughout the Classification which will in no way cause difficulty to persons already using the Classification. An important addition to the second edition will be an index. The Classification will be obtainable from me at the Vanderbilt Medical Library and the price will probably not exceed $1.50."

WHO'S WHO OF THE BULLETIN'S CONTRIBUTORS

PROFESSOR Doctor Neuburger and Professor Doctor Riesman, the Saints Cosmas and Damian of this issue of the *Bulletin*, require not so much an introduction to, as a word of greeting from, this Association. Our Honorary Member, **Professor Neuburger**, a pupil of Puschmann, and himself the founder of the Vienna Institute of the History of Medicine, has published many distinguished contributions both to medicine itself and to the interpretation of its history. The *Bulletin* feels that the translation of his historical sketch of the development of Urology will be widely welcomed, not only for the intrinsic value of the subject, but, what is perhaps more important, for the fact that the article comes from the hands of one of the greatest living authorities on the history of medicine. . . . Members of the Association who attended the Annual Meeting at Rochester, N. Y. will recall that a happy coincidence brought **Dr. Riesman** as a guest speaker on the day on which his book, "The story of medicine in the middle ages," was published. One of the country's most distinguished clinicians, Dr. Riesman, through his teaching and writing, has contributed notably to the advancement of a general public and professional interest in the history of his profession. Like every great physician, he might adopt as his motto the Terentian line, *Nil humanum alienum a me puto*—one

is as likely in his work to come across a quotation from Dante or Goethe, from Romain Rolland or Bernard Shaw, as one from the earliest or most recent of his medical colleagues. . . . **Dr. Jameson** has illustrated his thesis—that the doctor in the small community can be well taken care of, bibliographically speaking—by publishing, *magna cum laude,* within recent months two books, "Gynecological and obstetrical tuberculosis," and "Gynecology and obstetrics" (v. 17 of the *Clio Medica* handbooks on the history of medicine). Members of the Association will note with dismay his inclination to retreat before the intricacies of certain of our larger libraries, and will unite in assuring him that our hocus-pocus is not meant to mystify or terrify, but is purely a defense mechanism of us "passive introverts" (see Mrs. Hunt's Abstracts Department). In whatever time may be left over from his practice, his writing, and hunting, Dr. Jameson constructs ship models with a scientist's eye for accuracy of detail, and an artist's for beauty of line. . . .

Miss Gregory's article, we feel, will win her the gratitude of many librarians and library committees, and the interest of all. What it leaves unanswered is the unanswerable—the personal equation. Her "B" List, in particular, suggests that our readers might welcome an opportunity to comment on it, or upon the conclusions of the article as a whole. If any such comments should be received, an effort will be made to allot space to them in our next issue. Miss Gregory is perhaps best known for her recent book, "The A B C of the endocrines." She is an editorial assistant of the Science Press. Because of her gallant acceptance of the editorial pruning of her article—undertaken in order to print it complete in the single issue—the editors are said to be seriously considering putting her name up for the *Bulletin's* Peace Prize.

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